

TEACHER'S GUIDE



to the Alaska Benchmark Examination Grade 3

State of Alaska
Department of Education
& Early Development

LETTER FROM THE COMMISSIONER



*D*ear Teacher:

This Teacher's Guide to the Alaska Performance Standards and the Alaska Benchmark Examination in Reading, Writing and Mathematics is designed to help you assist students to do their best on the Alaska Benchmark Examinations. There are three guides in this series—one for students in grade three, another for grade six and a third for grade eight.

This publication is the latest in a series of “bridge materials” that the Department of Education & Early Development has published to help increase student performance by “bridging” the learning gap between the Alaska Student Performance Standards in reading, writing and mathematics and the examinations that measure how well students are learning the standards.

This guide presents excellent ideas and activities on how to teach the concepts and skills specified in each of the Alaska performance standards. It also presents the best thinking of a group of teachers who are also content specialists. This group developed the ideas and activities over a period of time in 2001.

The publication can be placed in a three-holed binder. As time goes on, you can insert additional activities that prove effective for you and other teachers.

I thank the dozens of teachers and administrators who have contributed their time and expertise to this project. I also applaud all of you who are helping make our schools top quality places for students to learn.

Sincerely,

A handwritten signature in cursive script that reads "Shirley J. Holloway".

Shirley J. Holloway, Ph.D.
Commissioner of Education & Early Development

TABLE OF CONTENTS

PART ONE

Introduction—What This Teacher’s Guide Can Do For You	5
Key to Numbering of the Alaska Performance Standards	5
Frequently Asked Questions	7

READING

What the Reading Test will be like	11
What the test will assess	11
Types of questions	11
Scoring	11
Reporting students’ scores	11
Time and materials required	11
Preparing Students to Meet Specific Standards in Reading	13
Suggested Activities and Sample Test Questions	13

PART TWO

WRITING

What the Writing Test will be like	23
What the test will assess	23
Types of questions	23
Scoring	23
Reporting students’ scores	23
Time and materials required	23
Preparing Students to Meet Specific Standards in Writing	25
Suggested Activities and Sample Test Questions	25

PART THREE

MATHEMATICS

What the Mathematics Test will be like	33
What the test will assess	33
Types of questions	33
How test questions relate to key elements of the mathematics standards	33
Scoring	34
Reporting students’ scores	34
Resources provided with the test	34
Time allowed for the test	34
Preparing Students to Meet Specific Standards in Mathematics	35
Suggested Activities and Sample Test Questions	
A1—Numeration	35
A2—Measurement	38
A3—Estimation and Computation	41
A4—Functions and Relationships	43
A5—Geometry	44
A6—Statistics and Probability	46

PART FOUR

GLOSSARIES AND RESOURCES FOR TEACHERS

Glossary—Reading and Writing 51

Resources for Teaching Reading and Writing 55

Glossary—Mathematics 57

Resources for Teaching Mathematics 65

APPENDIX 1

Alaska Content and Performance Standards in Three Subjects

Reading 69

Writing 73

Mathematics 75

APPENDIX 2

Practice Tests, Scoring Guides, and Test Item Maps
for the Grade 3 Benchmark Exam

Reading 87

Writing 95

Mathematics 111

APPENDIX 3

Proficiency Descriptors

What Proficiency Descriptors Can Tell Teachers, Students, and Parents

Reading, Grade 3—short form, long form 125

Writing, Grade 3—short form, long form 127

Mathematics, Grade 3—short form, long form 129

APPENDIX 4

An Overview of Standards and the Comprehensive System
of Student Assessment in Alaska

..... 135

Acknowledgments 137

For More Information 139

INTRODUCTION

WHAT THIS TEACHER'S GUIDE CAN DO FOR YOU

Dear Teacher,

If you have questions about the Alaska Performance Standards and the Benchmark Examinations that will measure how well your students are reaching those standards, this guide should answer many of them.

Parts 1, 2, and 3 of the guide share ideas from master teachers that will help you prepare your students to meet the Alaska Performance Standards in Reading, Writing, and Mathematics. They include **Suggested Activities** for teaching each standard, examples of the **kinds of test questions** used to assess students on particular standards, and some **specific information about the tests** in each subject area. In addition:

- **Frequently Asked Questions**, immediately following this introduction, offer overall information about the Benchmark Exams.
- **Glossaries** in Part 4 clarify the uses of certain terms for Reading, Writing, and Mathematics.
- **Resources for Teachers** in Part 4 list publications and web sites you may find helpful in teaching Reading, Writing, and Mathematics.
- In Appendix 1 you will find charts showing the **Alaska Content and Performance Standards in Reading, Writing and Mathematics** for students of all ages.
- In Appendix 2 you will find the complete **Practice Tests, Scoring Guides, and Test Item Maps** for the Grade 3 Benchmark tests.
- In Appendix 3 you will find **Proficiency Descriptors** that will help you gauge your students' competencies in specific subject areas.
- And in Appendix 4 an **Overview of Standards and the Comprehensive System of Student Assessment in Alaska** will give you a sense of how Alaska's standards and exams were developed and how they fit into students' progress from kindergarten through grade 12.

You, your students, parents, and other members of your community can also access nearly all this information on the Department of Education & Early Development web site (www.eed.state.ak.us).

We hope this guide will give you some new ideas for teaching the content and skills reflected in the statewide standards and help you prepare your students to succeed on the Grade 3 Benchmark Exam. Ideally, it will provide many opportunities for your students to demonstrate what they know and for you to discover what more they may need to know to meet and exceed the expectations expressed in the Alaska content and performance standards.

KEY TO NUMBERING OF THE ALASKA PERFORMANCE STANDARDS

FOR READING AND WRITING

This guide numbers the Alaska Performance Standards according to the system used in the tables of Alaska Performance Standards on the Department of Education & Early Development web site (www.eed.state.ak.us). Please note that the number systems for Reading and Writing differ from the system for Mathematics.

- The initial letter R or W indicates the subject area, Reading or Writing
- The first numeral indicates the age level
 - 1 = ages 5-7, assessed in grade 3
 - 2 = ages 8-10, assessed in grade 6
 - 3 = ages 11-14, assessed in grade 8

- The second numeral (sometimes followed by “a” or “b”) indicates the performance standard

Thus, a standard numbered R1.9 refers to Reading Performance Standard 9 for students ages 5-7.

FOR MATHEMATICS

- The initial letter A refers to the first Mathematics content standard.
- The first numeral indicates one of the six key elements under Mathematics Content Standard A. Those elements include:
 - 1—Numeration
 - 2—Measurement
 - 3—Estimation and Computation
 - 4—Functions and Relationships
 - 5—Geometry
 - 6—Statistics and Probability.
- The second numeral indicates the age level, using the numbers 1, 2, and 3 linked to the same age groups as in the Reading and Writing Performance Standards.
- The third numeral indicates the Mathematics Performance Standard under a particular key element.

Thus, a standard numbered A5.1.2 refers to Mathematics Performance Standard 2 under key element 5—Geometry, for students ages 5-7.

FREQUENTLY ASKED QUESTIONS

Q
A

What do the Alaska Benchmark Examinations measure?

The Alaska Benchmark Examinations measure whether students are achieving statewide academic standards in reading, writing, and math. The standards are benchmarked at three age levels: ages 5-7 (tested at grade 3); ages 8-11 (tested at grade 6); and ages 11-14 (tested at grade 8). Students will need to pass a fourth exam in reading, writing, and math before they can qualify for a high school diploma. The fourth exam is called the Alaska High School Graduation Qualifying Examination.

Q
A

Why do we have the Alaska Benchmark Examinations?

The Alaska Legislature authorized the exams, and the State Board of Education & Early Development sets the policy for their development. The Department of Education & Early Development contracted with CTB/McGraw-Hill, a commercial test publisher, to develop the examinations.

Q
A

How will Alaskans know whether the Alaska Benchmark Examinations are appropriate for students in our state?

The State Board of Education & Early Development appointed several committees of Alaskans to review the work of the test publisher. The committees made sure the examinations are fair for all students in Alaska and that they measure the levels of achievement that Alaskans expect of their young people at certain points in their schooling. The committees also looked at such issues as test bias and alignment with the Alaska Performance Standards in Reading, Writing, and Mathematics.

Q
A

Will there be any financial cost to parents or students for taking the Alaska Benchmark Examinations?

No.

Q
A

How long will students spend taking tests?

No time limit will be set for finishing a test. Students may take as long as they need to complete it. However, most students can expect to spend two or three hours to complete each of the three tests. School districts may administer one test per day over a three-day period, or they may choose to subdivide the tests and administer them in shorter sessions over a five-day period.

Q
A

What kinds of questions will be on the Alaska Benchmark Examinations?

There will be three types of questions on all the Benchmark Examinations: multiple-choice, short “constructed-response,” and extended “constructed-response.” Multiple-choice questions will offer three or four answer choices; students will select the best answer and mark the appropriate circle. For “constructed-response” questions, students will write their answers on lines or in spaces provided. Short “constructed-response” questions will require a few words, phrases, or sentences; that a problem be solved; or that a form or chart be completed. They may take two to five minutes to complete. Extended “constructed-response” questions may require students to write a paragraph, an essay, or a story; or to complete a multi-step task. They may require 15 minutes to an hour to complete. Constructed-response questions in mathematics will require students to show their work.

Q
A**How will students, parents, and school districts learn the results of the Alaska Benchmark Examinations?**

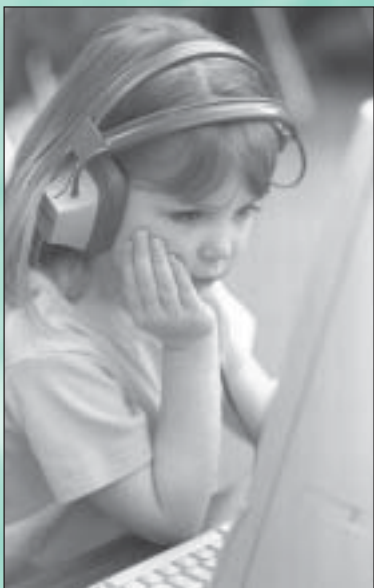
The Department of Education & Early Development will coordinate the administration, scoring, and reporting of the Alaska Benchmark Examinations. Following the administration and scoring of the examinations, the department will report test results for individual students, schools, and school districts. The reports will provide information about student strengths and weaknesses in reading, writing, and mathematics and how they relate to specific performance standards that were developed for Alaska students.

Q
A**What are passing scores on the Alaska Benchmark Examinations?**

There are no passing scores. Instead, students can demonstrate four different levels of performance on each subject area test: advanced, proficient, below proficient, and not proficient. Several committees involving some 250 Alaska educators, parents, Native leaders, business leaders, and others recommended the points (or “cut scores”) that would separate each proficiency level from the others. The scores were later adopted by the State Board of Education & Early Development.

Q
A**What else do the four performance levels show?**

The committees that established what scores would distinguish between performance levels also developed “proficiency descriptors.” These describe what students at each proficiency level can do in terms of the content and skills that are assessed on the Benchmark Examinations. The descriptors can help teachers, parents, and students determine what students need to practice to progress academically and meet the performance standards for each subject area and grade level.



PART ONE

Reading

READING STANDARDS & ASSESSMENT

WHAT THE READING TEST WILL BE LIKE

The Reading Test of the Grade 3 Alaska Benchmark Examination will assess students' ability to:

- use a variety of skills to comprehend text;
- retell or restate information;
- identify main ideas, basic story elements, and forms of texts;
- read and follow simple directions; and
- make connections between a text, personal experiences, and other texts.

TYPES OF QUESTIONS

The Reading Test will include:

- about 30 multiple-choice questions in which students will be asked to select the best answer from a list of three or four possible answers;
- about five short “constructed-response” questions in which students may be asked to write their answers in a few words, phrases or sentences; or to draw a picture and tell about what they drew; or to complete a graph or chart;
- one extended “constructed-response” question that will ask students to write a longer response to a prompt.

Questions in the Reading Test will be based on short passages of reading, which may include fiction, non-fiction, and other genres.

SCORING

Students' answers to multiple-choice questions in the Reading Test will be scored according to an answer key. Correct answers will receive one point; incorrect answers will receive no points.

Readers will score students' answers to “constructed-response” questions by comparing them to item-specific scoring guides, which show exemplary responses and provide guidelines for the number of points to be awarded.

REPORTING STUDENTS' SCORES

Each student's scores for the Reading Test will provide three kinds of information:

- an overall score
- one of four proficiency ratings:
 - advanced
 - proficient
 - below proficient
 - not proficient
- information about how well the student scored on each of the reading standards assessed by the test.

(For more information about proficiency levels and how student scores relate to performance standards, see the Proficiency Descriptors in Appendix 3 at the back of this guide.)

TIME AND MATERIALS REQUIRED

Students may take as long as they need to complete the Reading Test, but most students should be able to finish in a total of two to three hours. All necessary materials will be provided. Students are not allowed to use dictionaries, thesauruses, or other reference materials during the test, except in some cases, as in accommodations for students with disabilities. (See Participation Guidelines for the Inclusion of Special Education and LEP Students in State Assessments under “Student Testing” on the Department of Education & Early Development web site (www.eed.state.ak.us).

PREPARING STUDENTS to Meet Specific Standards in Reading

This section describes activities that teachers can use to help their students meet each of the Reading Performance Standards for students ages 5-7 (tested on the Grade 3 Benchmark Examination). Suggested activities are keyed to specific performance standards, which are spelled out in the lefthand column adjacent to them.

This section also includes sample test items from the Reading Practice Test for Grade 3, and some explanations of how specific test items relate to specific performance standards.

(The Alaska Reading Performance Standards for students at all age levels can be found in Appendix 1 at the back of this guide; on the Department of Education & Early Development web site (www.eed.state.ak.us) under “Standards for Student Learning”; and in the booklet Standards for Alaska Students, Alaska Department of Education & Early Development, February 1999.)

(The complete Reading Practice Test and Scoring Guides for the Grade 3 Benchmark Exam can be found in Appendix 2.)

PURPOSE

Certain skills are fundamental to promoting students’ continued development as readers. Students who have these skills can:

- decode text,
- identify sight words,
- use context and prior knowledge to aid comprehension,
- read fluently, and
- understand what they read.

SUGGESTED ACTIVITIES

PERFORMANCE STANDARD: R.1.1a

Students can distinguish, reproduce, and manipulate the sounds in words.

Distinguishing, reproducing, and manipulating the sounds in words

- Have students read rhyming books such as those by Dr. Seuss. Have them create their own versions, complete with illustrations. Bind students’ stories and have them available for other classes to read, or for the school library to have on display.

PERFORMANCE STANDARD: R.1.1b

Students can use a combination of the following to read and comprehend text:

- knowledge of phonics, alphabet, and alphabetic principals, *e.g.*, recognition of letter shapes, letter names, letter/sound relationships, initial/final sound relationships, initial/final consonants, vowels, letter patterns;
- pictures and visual cues;

Using a combination of skills to read and comprehend text

- Play “Guess the Word” with students on a regular basis. Write a sentence on the board or an overhead and cover a key word. Have students guess what the word is using the context of the sentence and language structure. List their guesses, then expose the first letter of the word (prediction) and have them guess again. If needed, expose letters at the middle or end of the word, encouraging them to use their knowledge of letter-sound correspondences.
- “Mystery Messages” can also be played on a regular basis. Write a short message on the board, replacing a few key words with underlined blank spaces. The message might be about something the class learned or did on the previous day, or a general message about the weather or news in the community. Ask students to read the message and figure out what is needed to fill in the blanks. Students could also write the message, filling in the blanks, as handwriting practice. If you include some of their spelling words, this activity can also provide practice in spelling.

- sight recognition of high frequency vocabulary words;
- word structure, *e.g.*, root words, prefixes, suffixes, rhyming words;
- language structure, *e.g.*, word order, grammar;
- meaning structure, *e.g.*, prior knowledge and context;
- text structure, *e.g.*, read left to right.

- Encourage students to continue reading when they come to a word they don't know and can't decode using phonics skills. Teach them to read to the end of the next sentence and then go back and try to figure out the unknown word using both context cues and knowledge of letter-sound correspondences.
- Make charts of word families as a class activity. A word family is made by taking a root word and making as many forms of that word as possible (for example, the word "work" would have family members such as works, worked, working, workable, rework, workout.)

SAMPLE PRACTICE QUESTION

5. Which of these is the root word, or base word, of standing?

- Ⓐ ing
- Ⓑ stan
- Ⓒ stand

Comments: Practice Test item 5 relates to standard R1.1b because it asks students to use their knowledge of word structure in identifying a root word.

PERFORMANCE STANDARD: R1.2a

Students can comprehend literal meaning from text.

Comprehending literal meaning from text

- Have students read both fiction and non-fiction materials, then retell what they have read.
- Use Cloze activities (that is, having students supply words that have been deleted from a text) based on fiction and non-fiction materials. These can help children learn to use their knowledge of semantics (meaning) and syntax (sentence structure/grammar) to determine literal meaning from text.
- Have students use information from non-fiction materials to create short oral or written reports they can share with the class.
- Have two or more students compose multiple-choice questions about a passage they have read together. Compile the questions in a worksheet other students can do individually or as a class.

SAMPLE PRACTICE QUESTION

After reading the passage on "Arbor Day," students are asked a number of questions including:

12. Which of these is something settlers made from trees?

- Ⓐ shoes
- Ⓑ clothing
- Ⓒ furniture
- Ⓓ covered wagons

Comments: Practice Test item 12 relates to standard R1.2a because it asks students to answer questions about information provided directly in the text. Items 13, 14, 16, and 17 also ask students to answer questions about information provided in the text.

PERFORMANCE STANDARD: R1.2b

Students can use a variety of strategies to support comprehension, including predicting, questioning, rereading, and monitoring their own comprehension.

PERFORMANCE STANDARD: R1.3

Students can read texts aloud with expression, demonstrating knowledge of punctuation and other conventions of print.

PERFORMANCE STANDARD: R1.4a

Students can retell or dramatize a story after reading it.

Using a variety of strategies to support comprehension

- Have students keep a reader's response log to their reading.
- Provide many opportunities for students to predict what will happen next. Do this when reading aloud to the class, and when doing guided reading activities.
- Have older students include a "What Next?" section in their reader's response log, and write predictions when they finish each chapter of a chapter book.

SAMPLE PRACTICE QUESTION

After reading the passage on "Close Friends," students are asked a number of questions including:

4. The children make a second snowman because
- Ⓐ they like playing in the snow
 - Ⓑ they don't want the first snowman to be lonely
 - Ⓒ they are trying to show off for Squirrel and Bird

Comments: Practice Test items 4 and 10 relate to standard R1.2b because they require students to use information from the text to answer a question that isn't directly answered in the text. Items 6 and 18 also relate to this standard in that children should be encouraged to reread sections of the text in order to answer these test items. Item 8 also relates to standard R1.2b because it asks students to use information from the text to predict what might happen next.

Reading texts aloud with expression

- Have students read into a tape recorder then listen to themselves while following along in the text. See if they can see and hear how punctuation and other conventions suggest uses of expression.
- Hold a readers' theater with two students reading. Have the readers practice to increase their awareness of meaning and the use of punctuation and expression.
- Provide opportunities for students to read to younger students. Make sure they have time to practice reading the selection first.

Retelling or dramatizing a story after reading it

- Teach students to use their hands to remind them of important features of a book or story.
 - palm—This is what this book is about.
 - thumb—This is "who" (characters).
 - index finger—This is "where" (setting).
 - middle finger—This is "when" (setting).
 - fourth finger—This is the "problem" (plot).
 - little finger—This is the ending (or, if you don't want to tell the ending, share one way in which the character tried to solve the problem).
 - clap hands—Tell one thing in your life this story makes you think about.
- Interview students as if they are characters from a book. Be sure to ask them the "5W's and an H" questions—who, what, when, where, why, and how.

SAMPLE PRACTICE QUESTION

After reading the passage on “Arbor Day,” students are asked a number of questions including:

11. These pictures tell the story of the mouse’s journey. In the first picture, the mouse meets the rooster. In the second picture, the mouse meets the cat. In the empty box, draw what happens to the mouse right after he meets the cat. Then on the lines next to your picture tell about what you drew.



Comments: Practice Test item 11 relates to standard R1.4a because it asks students to retell one part of a story by first representing it in drawing and then in writing.

PERFORMANCE STANDARD: R1.4b

Students can restate information after reading a text.

Restating information after reading a text

- Have students write short responses to questions about a text. For example, have students read as partners chapter two of Joan Sandin’s *The Long Way to a New Land*. Have them list in their own words five things that Carl Erik’s family packed in the “America trunk,” then have them write a paragraph that explains why the family chose those things. Remind them to include supportive facts and details.
- Have students read a short story and then draw three sketches, one showing what happened at the beginning of the story, one showing what happened in the middle, and one showing what happened at the end.

SAMPLE PRACTICE QUESTION

After reading the passage on “Close Friends,” students are asked a number of questions including:

6. On the lines below, write two ways the children cheer up the sad snowman.

Comments: Practice Test items 6 and 18 relate to standard R1.4b because they ask students to write about events in the story using their own words.

**PERFORMANCE
STANDARD: R1.5**

Students can identify the main idea of a passage.

Identifying the main idea of a passage

- Model for students how they could answer this question about a passage: “If you could tell what this paragraph is about in five words, what would you say?” Then have the students show they can do it. (This is a difficult concept for children, as they want to tell about everything in a passage. See if you can get them down to two words or even one with this exercise.)
- Read a paragraph of fiction or non-fiction and ask children to come up with a title for the paragraph. This is one way to get them down to one or two key words.

SAMPLE PRACTICE QUESTION

After reading the passage on “Close Friends,” students are asked a number of questions including:

1. What is this story mostly about?

- Ⓐ playing in the snow
- Ⓑ cheering up a sad snowman
- Ⓒ learning how to make a snowman

Comments: Practice Test items 1 and 15 relate to standard R1.5 because they ask students to identify what the passages are “mostly about.”

**PERFORMANCE
STANDARD: R1.6**

Students can read and follow simple directions to complete a simple task.

Reading and following simple directions

- Have students follow a simple recipe or directions for an art activity.

Comments: Practice Test item 11 relates to standard R1.6 because students must follow simple directions to complete two activities—(1) draw what happens next in the story, and (2) write about it—in order to get full credit for their answers.

**PERFORMANCE
STANDARD: R1.7**

Students can distinguish between common forms of text (genres):

- fiction and non-fiction,
- prose and poetry, and
- short story and drama.

Identifying forms of texts**• fiction and non-fiction**

Use a T chart to list the comparative qualities of fiction and non-fiction in parallel columns. Students could also organize their thinking using Venn diagrams. Have them use the charts as a basis for writing that compares and contrasts the two genres.

• prose and poetry

Read a prose passage on a given topic to students, then read a poem on the same topic so they can hear the different cadences. Discuss the differences between the two genres. Ask students to prepare and read poems and related prose aloud to the class. They can then ask their classmates to describe the differences.

• short story and drama

Show the difference in format between short stories and dramas. Point out that a drama or play has dialogue that can be readily seen on the page. Readers’ theater, in which students read, rather than memorize and act out, parts in a story or play, works well for teaching this concept.

PERFORMANCE STANDARD: R1.8

Students can identify and describe basic plot, main characters, and setting (time and place) in fiction.

PERFORMANCE STANDARD: R1.9

Students can express their own opinions about texts.

PERFORMANCE STANDARD: R1.10

Students can make connections between a text and personal experiences, the experiences of others, or other texts, and they can locate details in the text to illustrate these connections.

SAMPLE PRACTICE QUESTION

After reading the passage on “The Young Mouse,” students are asked a number of questions including:

7. This passage is an example of

- Ⓐ a poem
- Ⓑ fiction
- Ⓒ a play
- Ⓓ nonfiction

Comments: Practice Test item 7 relates to standard R1.7 because it asks students to identify whether the passage is fiction, a poem, a play, or nonfiction.

Identifying basic story elements

- The two activities suggested under standard R1.4a would also work well for teaching this skill.

Comments: Practice Test item 6 relates to standard R1.8 because it asks students to retell key elements of the plot. Practice Test item 9 also relates to the standard because it asks students to identify a key character trait of one of the main characters in the passage.

Expressing opinions about texts

- Discuss standard formats for book reviews, and have students read book reviews. Have students write book reviews.
- Have the class keep a book catalogue. Students fill out a form about each book they read, and put it into the catalogue in alphabetical order by title. The form could include:
 - a “5W’s and an H” chart with the questions—who, what, when, where, why, and how,
 - a 3-point rating scale—Great, Okay, Not so Good, and
 - a place to list the names of classmates they think might enjoy the book.
- Have students write in response journals about how they agree and/or disagree with the author of a book or story they have read.

Making connections and locating details to illustrate the connections

- Use response journals in class. Have guidelines for students such as the following:
 - Take time to write down any thoughts you have in relation to the text. If you’re intrigued by statements, issues, problems, or a character, write your response.
 - Make connections with your own experience. What does the reading make you think of? Does it remind you of anyone or anything?

- Make connections to other texts, concepts, or events. Does the reading bring to mind related issues?
- Ask questions about the text. What perplexes you? Write statements beginning “I wonder why . . .” or “I was surprised when . . .”
- Try agreeing with the author. Write down ideas about why you agree.
- Try arguing with the author. On what points do you disagree?

SAMPLE PRACTICE QUESTION

After reading the passage on “Close Friends,” students are asked a number of questions including:

2. We know that Squirrel and Bird are close friends because

- Ⓐ they go everywhere together
- Ⓑ squirrels and birds are usually friends
- Ⓒ they are trying to cheer up a sad snowman

Comments: Practice Test item 2 relates to standard R1.10 because children need to know from experience that close friends go places together, and they need to connect that knowledge to details in the passage in order to answer the question correctly. Item 3 also relates to this standard because students must know from experience that not smiling may mean a person is sad, and they need to connect that information to details in the passage.

PERFORMANCE STANDARD: R1.11

Students can identify basic cultural influences in texts.

Identifying cultural influences in texts

- This is a great time for good teacher modeling. When reading books aloud to students, discuss how buildings, locations, food, dress, and dialogue reflect particular cultures.
- Tell students you are going on a picnic or a field trip and list items not used in your locale that you will take with you. Have students predict where the picnic (or field trip, etc.) will be.



PART TWO

Writing

PART TWO
WRITING

WRITING STANDARDS & ASSESSMENT

WHAT THE WRITING TEST WILL BE LIKE

The Writing Test of the Grade 3 Alaska Benchmark Examination will assess students' ability to:

- write complete sentences and stories;
- write for specific audiences;
- proofread writing for spelling, capitalization, and punctuation; and
- revise writing for detail and clarity.

TYPES OF QUESTIONS

The Writing Test will include:

- about 30 multiple-choice questions in which students will be asked to select the best answer from a list of three or four possible answers;
- about five short “constructed-response” questions that will ask students to write a sentence, phrase, or paragraph, or to edit a writing sample;
- one extended “constructed-response” question that will ask students to produce a longer response to a prompt.

The Writing Test will include a “Writing Skills Checklist” reminding students to check their written responses for such things as complete sentences, grammar, careful word choice, and spelling.

SCORING

Students' answers to multiple-choice questions in the Writing Test will be scored according to an answer key. Correct answers will receive one point; incorrect answers will receive no points.

Students' answers to short and extended “constructed-response” questions will be scored by raters who read each written answer and use 4-point and 6-point rubrics to determine how many points to award each answer. (You can see the rubrics in the scoring guide at the end of the Writing Practice Test in Appendix 2 of this guide.)

REPORTING STUDENTS' SCORES

Each student's scores for the Writing Test will provide three kinds of information:

- an overall score
- one of four proficiency ratings:
 - advanced
 - proficient
 - below proficient
 - not proficient
- information about how well the student scored on each of the writing standards assessed by the test.

(For more information about proficiency levels and how student scores relate to performance standards, see the Proficiency Descriptors in Appendix 3 at the back of this guide.)

TIME AND MATERIALS REQUIRED

Students may take as long as they need to complete the Writing Test, but most students should be able to finish in a total of two to three hours. All necessary materials will be provided. Students are not allowed to use dictionaries, thesauruses, or other reference materials during the test, except in some cases, as in accommodations for students with disabilities. (See Participation Guidelines for the Inclusion of Special Education and LEP Students in State Assessments under *Student Testing on the Department of Education & Early Development web site* (www.eed.state.ak.us)).

PREPARING STUDENTS to Meet Specific Standards in Writing

This section describes activities that teachers can use to help their students meet each of the Writing Performance Standards for students ages 5-7 (tested on the Grade 3 Benchmark Examination). Suggested activities are keyed to specific performance standards, which are spelled out in the lefthand column adjacent to them.

This section also includes sample test items from the Writing Practice Test for Grade 3, and some explanations of how specific test items relate to specific performance standards.

(The Alaska Writing Performance Standards for students at all age levels can be found in Appendix 1 at the back of this guide; on the Department of Education & Early Development web site (www.eed.state.ak.us) under “Standards for Student Learning”; and in the booklet Standards for Alaska Students, Alaska Department of Education & Early Development, February 1999.)

(The complete Writing Practice Test and Scoring Guides for the Grade 3 Benchmark Exam can be found in Appendix 2.)

PURPOSE

Certain skills are essential for communicating in writing. Students who have these skills can:

- write complete sentences and use a variety of simple sentence constructions;
- punctuate simple sentences correctly;
- write a paragraph on a single topic; and
- proofread their own and others’ writing for simple errors in spelling, punctuation, capitalization, and legibility.

SUGGESTED ACTIVITIES

PERFORMANCE STANDARD: W1.1a

Students can write complete sentences with a subject and a predicate.

Writing complete sentences

- Have students write books for younger children. These can be story books, picture books, or non-fiction books about a topic the class has been studying in science or social studies.
- Have word boxes for children, each containing different parts of speech. Have students select a word from each box and create a sentence. (This would require prior teaching of parts of speech.) This activity could be used quite easily in an independent learning activity center.

SAMPLE PRACTICE QUESTION

3. Choose the sentence that is written correctly.

- Ⓐ This time my dog.
- Ⓑ Going for a run.
- Ⓒ They will have fun.

Comments: Practice Test item 3 relates to standard W1.1a because it asks students to select the sentence that is correct from among three sentences. The other two sentence choices do not have both a subject and a predicate. Test items 4, 5, 9, 10, and 11 also relate to this standard, as they ask children to identify complete sentences or to select the phrase needed to complete a sentence.

PERFORMANCE STANDARD: W1.1b

Students can write a paragraph with a topic sentence and supporting details.

Writing paragraphs

- Have students write individual sentences on pieces of cash register tape and then order them in a logical sequence and rewrite them as a paragraph.
- Have a mystery box or bag and have students create sensory writing.
- Have students use graphic organizers showing topic, central idea, attributes, and functions.
- Have students write “biopoems” about story characters, using these guidelines to write one or more paragraphs:
 - line 1—character’s first name
 - line 2—title that might be given to this character
 - line 3—four words that describe the character
 - line 4—“lover of” (three items, objects or things the character loves)
 - line 5—“who believes” (one idea or concept the character believes)
 - line 6—“who wants” (three things)
 - line 7—“who uses” (three things)
 - line 8—“who gives” (three things)
 - line 9—“who says” (a direct quote)
 - line 10—last name or synonymous descriptor.
- Have students make a map and write about a favorite place.
- Have students bring a favorite item to school, then write three paragraphs about the item. The first paragraph could describe how they came to own this object and its background. The second could describe the object itself. The third could tell how and why the object has become important to them.
- Give students copies of the Writing Skills Checklist (found in the Writing Practice Test in Appendix 2) to use as a writing and proofreading guide throughout the year. Share elements of the scoring rubrics located at the back of the practice test with students, translating them into language appropriate for their ages.
- Make overhead transparencies of examples of student writing (with the authors’ permission) and use them to demonstrate to the class how writing samples are scored on the test. This will help build awareness of the important elements in their writing.

SAMPLE PRACTICE QUESTION

18. Many people have a favorite season or time of year. Think about your favorite season, and why it is your favorite. On the lines below, write a paragraph. Describe your favorite season and explain why it is your favorite. You do not have to use all the lines.



For this answer, make sure you use complete sentences and check your work for correct spelling, capitalization, and punctuation.

Comments: Practice Test item 18 relates to standard W1.1b because it asks students to write a paragraph and to describe and explain their topic selection. In describing and explaining, they will need to provide some details about their topic.

**PERFORMANCE
STANDARD: W1.1c**

Students can write short stories or compositions with a beginning, middle, and end.

Writing with a beginning, middle, and end

- Have students become familiar with who, what, when, where, why, and how in writing stories or articles.
- Have students become familiar with a Chain of Events graphic organizer, which traces the beginning, the first event, the second event, the final event, etc. of a story or other piece of writing. Have them ask: What is the initiating event? How does one event lead to another? What is the final outcome?
- Have the class write a 6-sentence paragraph with the teacher.
- Have students and teacher brainstorm using webbing, mapping, clustering, bubbling, or some other type of graphic organizer.
- Have students analyze fairy tales.
- Have students work in teams or independently to create stories with a common ending (such as finding treasure).
- Have students work with storyboards and write the text to the story, then read it aloud to younger students.

SAMPLE PRACTICE QUESTION

2. Pretend that a talking dog moved into your house. On the lines below and on the next pages, write a story describing what happened. Make sure your story has a beginning, a middle, and an end. You do not have to use all the lines.



For this answer, make sure you use complete sentences and check your work for correct spelling, capitalization, and punctuation.

Comments: Practice Test item 2 relates to standard W1.1c in that it asks students to write a fictional account of what would happen if a talking dog moved into their house. They are directed to use the writing skills checklist provided in the item, and to be sure their accounts include a beginning, middle, and end.

**PERFORMANCE
STANDARD: W1.2**

Students can write for a specific audience, including self, other children, parents, and other adults.

Writing for a specific audience

- Have students write in journals.
- Have students write plays or puppet shows for performance.
- Have them write stories for publication in the school paper, local paper, and other places.
- Teach students to write letters for various purposes (thank you letters to guest speakers, inquiry letters for field trips, etc.)
- Write a book about local animals as a class project. Include such topics as tracks, eating, establishing territories, etc.

Comments: Practice Test items 2 and 18 assess this standard. Item 2 relates to standard W1.2 because it asks students to write a story that might be appropriate for younger children.

PERFORMANCE STANDARD: W1.3a

Students can use a variety of simple sentence structures and basic rules of punctuation and capitalization in written work.

Using punctuation, capitalization, and a variety of sentence structures

- Make opportunities for students to use writing as a tool for learning in all subject areas.
- Use student work to evaluate and discuss grammar and punctuation. Have students create scoring guides.
- Hold daily oral language exercises with a local flavor, using streets, people, places, and other familiar things. Put students in charge of instruction and activity at the board.
- Have students dramatize sentences that use question marks, exclamation points, quotation marks, etc.

Comments: Practice Test items 2 and 18 relate to standard W1.3a because students need to use correct punctuation, capitalization, and varied sentence structure to receive full credit for their writing.

PERFORMANCE STANDARD: W1.3b

Students can proofread writing for legibility, spelling, capitalization, and punctuation when producing final drafts.

Proofreading

- Use peer response groups and partners to review students' writing on a regular basis.
- Hold student/teacher conferences.
- Post a chart of proofreading symbols in the classroom. (*See web site in Part Four, Resources for Teaching Reading and Writing.*)
- Have students read poetry out loud, with and without punctuation.
- Have students teach these skills to younger students.

SAMPLE PRACTICE QUESTION

1. Here is a paragraph about bicycling. There are six mistakes in capitalization, punctuation, and spelling. Draw a line through each mistake and write the correction in the space above it.

Everyone loves riding a bicycle, maybe it is the excitement of seeing new Places. What could be more fun than the sense of adventure as we pedal along our favorite paths. With the wind at our Backs, we feel alot like birds flying high up in the sky.



Comments: Practice Test item 1 relates to standard W1.3b because it asks students to proofread someone else's writing.

**PERFORMANCE
STANDARD: W1.4a**

Students can revise writing for detail and clarity.

Revising for detail and clarity

- Provide regular practice in writing for a variety of audiences.
- Give students opportunities to write for personally significant purposes.
- Have students give oral and written directions to different locations.
- Have students write directions for simple games.
- Have students write directions for recipes.

SAMPLE PRACTICE QUESTION

12. Choose the best way to write sentence 2.

- Ⓐ They are fast flyers.
- Ⓑ They were fast flyers.
- Ⓒ They had been fast flyers.
- Ⓓ Best as it is: They is fast flyers.

Comments: Practice Test items 12 and 13 relate to standard W1.4a because they ask students to select the forms of sentences that have the most effective wording. Item 17 requires students to combine two sentences into one effective sentence.

**PERFORMANCE
STANDARD: W1.4b**

Students can provide appropriate feedback to peers about written work.

Providing appropriate feedback to peers

- Show clear expectations and models for students' writing.
- Have students help write scoring guides.
- Hold a proofreading conference in which pairs of students meet to read through and edit each other's drafts.
- Show clear expectations for peer reviews.
- Have students work with a younger class on proofreading skills.
- Have students use the Writing Skills Checklist in the Benchmark Practice Test when peer editing or proofreading their own work.

**PERFORMANCE
STANDARD: W1.5**

Students can list titles and authors of books and other materials when used as references in written work.

Acknowledging authors' work

- Encourage students to think of themselves as "authors" and to value the importance of having their names on their work.
- Have a local author visit class.
- Discuss why recognition of an author's work is important and how it is noted in research.
- After sharing a book or story, discuss the author's bibliography.
- Decide on a particular format for listing authors and other materials as references. (What does your local district recommend?)



PART THREE

Mathematics

PART THREE
MATHEMATICS

MATHEMATICS STANDARDS & ASSESSMENT

WHAT THE MATHEMATICS TEST WILL BE LIKE

The Mathematics Test of the Grade 3 Alaska Benchmark Examination will assess students' ability to:

- use numbers to measure, estimate, and compute;
- understand simple mathematical functions and relationships;
- use simple statistics and probability theory;
- use mathematics to reason, solve problems, and communicate; and
- use geometry to solve problems involving points, lines, angles, surfaces and solids.

TYPES OF QUESTIONS

The Mathematics Test will include:

- about 30 multiple-choice questions in which students will be asked to select the best answer from a list of three or four possible answers;
- about five short “constructed-response” questions that will ask students to respond to various tasks by writing their final answers in words or numbers, completing a graph, showing their work, or justifying their answers;
- one extended “constructed-response” question asking students to show a considerable amount of their work, or supply detailed justification for their answers to a multi-step problem.

HOW TEST QUESTIONS RELATE TO KEY ELEMENTS OF THE MATHEMATICS STANDARDS

There are five Alaska Content Standards for Mathematics (*These can be found on the Department of Education & Early Development web site (www.eed.state.ak.us) under “Standards for Student Learning”; and in the booklet Standards for Alaska Students, under “Alaska Content Standards—Mathematics,” Alaska Department of Education & Early Development, February 1999).*

The first mathematics content standard (Standard A) is: “A student should understand mathematical facts, concepts, principles, and theories.” Standard A describes six key elements that encompass the six basic “strands” of content in mathematics. They include:

- A1—Numeration
- A2—Measurement
- A3—Estimation and Computation
- A4—Functions and Relationships
- A5—Geometry, and
- A6—Statistics and Probability.

Content standards B through E describe “process” skills and abilities. They include: B) Problem-solving, C) Communication, D) Reasoning, and E) Connections.

Performance standards for students are grouped under the six key elements encompassed in Mathematics Content Standard A and the four “process” skills encompassed in Content Standards B through E. (*These can also be found on the Department of Education & Early Development web site and in the booklet Standards for Alaska Students.*) There are 43 specific performance standards in mathematics for students ages 5-7; however, in many instances, student performance can be assessed on more than one of these standards at a time.

For example, there are seven specific performance standards under the Numeration strand. Questions that assess students on each of those seven performance standards have been grouped together on the Mathematics Test to form a single measurement of how well students understand numeration. Simi-

larly, questions assessing students on each of the seven performance standards under Geometry have been grouped together to form a single measurement of how well students understand geometry.

The same is true of questions measuring the other four key elements: Measurement, Estimation and Computation, Functions and Relationships, and Statistics and Probability. In fact, some questions assess more than one key element—requiring students to use functions and relationships, for example, at the same time they use estimation and computation. There are many crossovers.

There are also no test questions that are specific only to the “process” standards B through E (Problem-solving, Communication, Reasoning, and Connections). Students are assessed on these standards in the same questions used to assess their performance on the six key elements. For example, some questions may assess students’ problem-solving while using geometry. Some may assess students’ reasoning with questions involving functions and relationships, or probability and statistics.

SCORING

Students’ answers to multiple-choice questions on the Mathematics Test will be scored according to an answer key. Correct answers will receive one point; incorrect answers will receive no points.

Students’ answers to short and extended “constructed-response” questions will be rated on the basis of scoring guides specific to the question being asked. *(See examples in the scoring guides following the Mathematics Practice Test in Appendix 2 of this guide.)*

REPORTING STUDENTS’ SCORES

Each student’s report of results from the Mathematics Test will contain:

- an overall score
- one of four proficiency ratings:
 - advanced
 - proficient
 - below proficient
 - not proficient
- detailed information about performance for each of the six key elements and the four “process” standards. The report will not include information about student results on each of the performance standards within each content strand or “process” standard because there are too few test questions addressing each specific performance standard.

Scores from questions that measure both a content strand standard and a “process” standard will be used twice, once in the score for the content strand and again in the score for the “process” standard to which the question applies.

(For more information about proficiency levels and how student scores relate to performance standards, see the Proficiency Descriptors in Appendix 3 at the back of this guide.)

RESOURCES PROVIDED WITH THE TEST

All necessary materials will be provided with the test. Students are not allowed to use calculators during the test, except in some cases, as in accommodations for students with disabilities. *(See Participation Guidelines for the Inclusion of Special Education and LEP Students in State Assessments under Student Testing on the Department of Education & Early Development web site (www.eed.state.ak.us)).*

TIME ALLOWED FOR THE TEST

Students may take as long as they need to complete the Mathematics Test, but most students should be able to finish in a total of two to three hours.

PREPARING STUDENTS to Meet Specific Standards in Mathematics

This section describes activities that teachers can use to help their students meet each of the Mathematics Performance Standards for students ages 5-7 (tested on the Grade 3 Benchmark Examination). Suggested activities are keyed to specific performance standards, which are spelled out in the lefthand column adjacent to them.

This section also includes sample test items from the Mathematics Practice Test for Grade 3, and some explanations of how specific test items relate to specific performance standards.

(The Alaska Mathematics Performance Standards for students at all age levels can be found in Appendix 1 at the back of this guide; on the Department of Education & Early Development web site (www.eed.state.ak.us) under “Standards for Student Learning”; and in the booklet Standards for Alaska Students, Alaska Department of Education & Early Development, February 1999.)

(The complete Mathematics Practice Test and Scoring Guides for the Grade 3 Benchmark Exam can be found in Appendix 2.)

KEY ELEMENT 1. Numeration

PURPOSE

The ability to make sense of numbers is fundamental to understanding number magnitude and the effects of arithmetic operations. If children have number sense, they:

- understand the relationship of numbers to each other,
- are able to tell when an answer or a unit of measurement is reasonable,
- can use numbers effectively in many situations,
- model numbers in many ways, and
- use numbers to describe real world situations.

SUGGESTED ACTIVITIES

PERFORMANCE STANDARD: A1.1.1

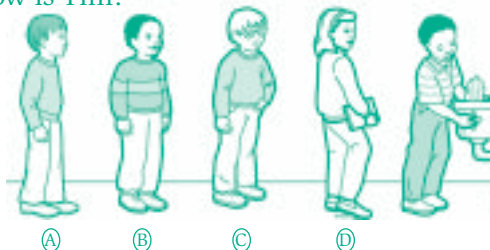
Students can read, write, order, count, and model one-to-one correspondence with whole numbers to 100.

Reading, writing, ordering, counting whole numbers

- Give students a collection of objects, then ask “How many do you have?”
- Do counting activities such as the following:
 - sort toys, count them, and label the groups
 - make a counting book of things around you
 - build patterns and count
 - roll a die, keep track of which number comes up most often, and chart this
 - arrange objects in a circle to see if students continue and count around the circle more than once.
- Do counting activities such as the following:
 - conduct a survey, keep a tally, and graph the results
 - spin a spinner, keep a tally, and graph the results
 - fill boxes with cubes and count them
 - compare different size boxes
 - play counting games.
- Use Venn diagrams to place the numbers from 1 to 30 according to the categories of multiples of 3, 2, and 5.
- Make a bar graph from a class survey.
- Find out how many different ways you can make change for 50 cents.

SAMPLE PRACTICE QUESTION

1. Tim is standing in line at the drinking fountain. He is the second student after the girl in the white sweater. Which of the students shown below is Tim?



Comments: Practice Test item 1 relates to standard A1.1.1 because students must recognize items in a particular *order*. The use of an ordinal number, *second*, also relates this item to standard A1.1.4.

PERFORMANCE STANDARD: A1.1.2

Students can use, model, and identify place value positions of 1's, 10's, and 100's.

Identifying place value

- Play games with base 10 blocks and trading boards.
- Using a collection of 12 beans ask "How could I glue these to a bean stick to show why it represents the number that we write as 12? What is there ONE of?"
- Using a pile of unifix cubes ask "Who can predict how many tens we can make? How many ones will be left over?"
- Cut up the 100's chart and put it back together.
- Use money and measurement to demonstrate place value ("How many feet equal 1 yard? How many dimes equal one dollar?").
- Cut an egg carton so it has only 10 compartments. Fill the compartments with a variety of things (one to one correspondence) to make groups of 10.

PERFORMANCE STANDARD: A1.1.3

Students can model and explain the processes of addition and subtraction, describing the relationship between the operations.

Using addition and subtraction

- Ask students to "Show how to do this" when given situations involving combining (for example, "You have 3 teddy bears. You get 2 more. How many teddy bears do you have now?").
- Give a child six objects, then ask "How many will you have if you give me 2?" Or use blocks to build and record $8 - 5$. (take-away)
- Use blocks to compare a row of 8 and a row of 5. Three do not have a "match." (comparison)

PERFORMANCE STANDARD: A1.1.4

Students can select and use various representations of ordinal and cardinal numbers.

Using ordinal and cardinal numbers

- Using a collection of objects ask "Which one is 1st, 3rd, 4th, etc.?"
- Create a variety of large, differently shaped number grids and have students hop on the numbers in sequence, from lowest to highest and then back down again. (Vary the grid so that the lowest number is not always one and consecutive numbers are not always contiguous.)
- Have students dramatize place value from left to right through body movement (for example, given 234, make two large movements, three smaller movements, and four slight movements, while counting place value orally).

PERFORMANCE STANDARD: A1.1.5

Students can identify, model, and label simple fractions, describing and defining them as equal parts of a whole, a region, or a set.

Identifying simple fractions

- Have students fold a paper in half or identify what fraction of a shape, such as a circle, is shown. (region models)
- Have students cut a straw in half or use fraction bars to define part of a whole by comparing a whole to a half. (number line models)
- Have students pick up half a set of objects, or define a whole using 6 beans and demonstrate that one half is a set of three beans. (sets and collections)

SAMPLE PRACTICE QUESTION

18. Donnie lit a candle. It looked like this.



After he blew out the candle, it looked like this.



What fraction of the candle was used?

- (A) $\frac{1}{5}$ (B) $\frac{2}{5}$ (C) $\frac{3}{5}$ (D) $\frac{4}{5}$

Comments: Practice Test item 18 relates to standard A1.1.5 because students must identify the fraction that describes the picture showing equal parts of a whole. Item 17 also relates to standard A1.1.5 because students must identify the set that models a simple fraction.

PERFORMANCE STANDARD: A1.1.6

Students can identify, describe, and extend patterns inherent in the number system; skip count by 2's, 5's, and 10's; add and subtract by 10; identify even and odd numbers.

Identifying patterns in the number system

- Using a number line ask "How far can you count? Count until I stop you."
- Using a number line ask "Can you count by 2's, 5's, 10's? Touch or circle the numbers as you go."
- Use a 0-99 chart to skip count by 2's and color them red, 5's green, and 10's blue.
- Use a 0-99 chart to color the even numbers yellow and the odd numbers purple.

SAMPLE PRACTICE QUESTION

2. Sam and his friends are making toy bears. They will glue 2 eyes on each of the bears shown below.



How many eyes will they need for all the bears?

- (A) 6 (B) 8 (C) 10 (D) 12

Comments: Students could do the problem in Practice Test item 2 by skip counting by 2's, which would relate to standard A.1.1.6, or they could just count, which would relate to standard A1.1.1.

Demonstrating commutative and identity properties of addition

- Model an addition problem with manipulatives. Show related number sentences such as $3+4=7$, $4+3=7$.
- Use patterns to discover the identity properties of addition (for example, $3+0=3$, $0+6=6$, $8+0=8$).

PERFORMANCE STANDARD: A1.1.7

Students can demonstrate the commutative and identity properties of addition.

KEY ELEMENT 2. Measurement

PURPOSE

Measurement is important because of its power to help children see that mathematics is useful in everyday life and to help them develop many mathematical concepts and skills. Measuring is a natural context in which to introduce the need for using fractions and decimals, and it allows children to be actively involved in solving and discussing problems. If children have a solid foundation in measurement, they:

- understand the attributes to be measured as well as what it means to measure,
- use measurement systems, tools, and techniques,
- compare objects and count units, and
- make connections between spatial concepts and numbers.

SUGGESTED ACTIVITIES

PERFORMANCE STANDARD: A2.1.1

Students can compare and order objects by various measurable attributes including date, time, temperature, length, weight, capacity, area, and volume.

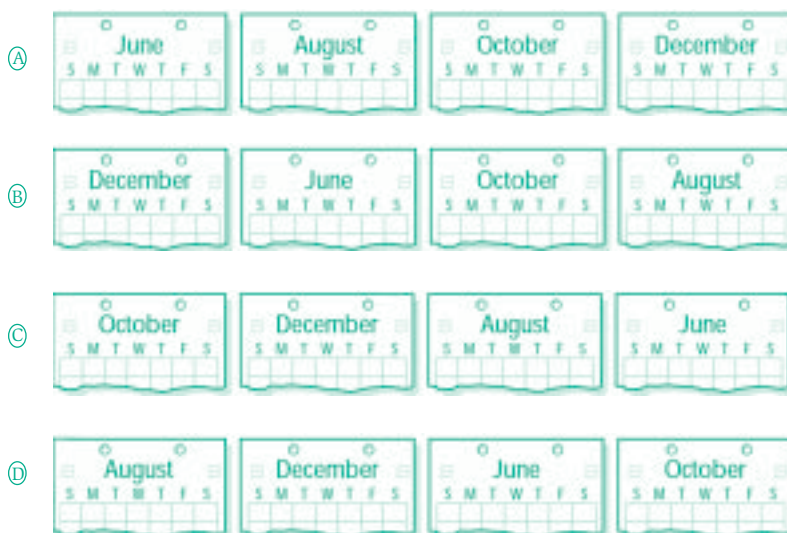
Comparing and ordering objects by measurable attributes

- Do calendar pattern activities.
- Have students read and record the outdoor temperature each day. Make paper thermometers and adjust the “mercury line” to answer questions about hotter and colder, and make estimations.
- Have students compare mouthful capacities by drinking liquid through straws and spitting it into a graduated beaker or measuring cup.

- Compare the areas of objects such as book covers, desktops, and paper squares using unifix cubes.
- Have students fill a pan with water poured from several glasses. Find a different size drinking glass and have the students estimate (guess) whether it will take more or fewer glasses of the new size to fill the pan.

SAMPLE PRACTICE QUESTION

16. Mr. Field, the school principal, lost four pages from his calendar. Which of these shows the missing pages in monthly order?



Comments: Practice Test item 16 relates to standard A2.1.1 because students need to order objects by the measurable attribute, months.

PERFORMANCE STANDARD: A2.1.2

Students can compare objects to standard and non-standard units to identify objects that are greater than, less than, and equal to a given unit.

PERFORMANCE STANDARD: A2.1.3

PERFORMANCE STANDARD: A2.1.4

Students can choose a unit of measure, estimate the length or weight of objects, and then measure to check for reasonableness.

Comparing objects using standard and non-standard units

- Measure and compare objects such as leaves using paper clips.
- Use a teeter-totter to compare students' weights.
- Use a sand table to compare the volumes of objects using standard and non-standard units.

There is no performance standard in this area for ages 5-7.

Estimating measurements

- Have students estimate and measure distances in the classroom using their feet.
- Use a balance scale, homemade or commercial, to estimate amounts of various materials needed to balance each other (for example, find out how many jelly beans it takes to balance a certain number of crayons and estimate how many it would take for other amounts of crayons).

PERFORMANCE STANDARD: A2.1.5

Students can tell time to the nearest half hour, distinguishing between morning, afternoon, and evening.

PERFORMANCE STANDARD: A2.1.5

Students can identify coins, their value, and the value of given sets of coins.

- Have students use dry cereal pieces (Cheerios®, Spoon Sized Shredded Wheat®, etc.) to estimate how many groups of five it would take to fill a small container.

Telling time to the nearest hour

- Have students draw pictures of things they do at various times of the day, such as 8:00 at night and 8:00 in the morning.
- Compare various types of clocks and time displays.

SAMPLE PRACTICE QUESTION

11. Basketball practice starts in the afternoon, after school. Which of these could be the time basketball practice starts?

- Ⓐ 12:00 A.M.
- Ⓑ 7:30 A.M.
- Ⓒ 10:00 A.M.
- Ⓓ 3:30 P.M.



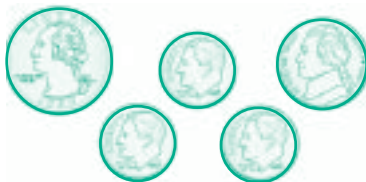
Comments: Practice Test item 11 relates to standard A2.1.5 because students need to identify a time that could be in the afternoon.

Identifying coins and their value

- Have students sort a “pocketful of change” and compare the number and value of coins with their neighbors.
- Have students race for \$1.00. Use 30 pennies, 20 dimes, 2 (play) dollars, and 2 dice. Use the sum on the dice to decide how many cents students can take per turn. Students may exchange pennies for dimes during their turn. Play until one person has \$1.00.

SAMPLE PRACTICE QUESTION

15. Cindy wants to buy some balloons for a party. Each balloon costs 5 cents. The money Cindy has to spend is shown below.



How many balloons can Cindy buy?

Answer: _____ balloons

On the lines below, explain in words how you found your answer.

Comments: Practice Test item 15 relates to standard A2.1.5 because students need to determine the value of a given set of coins. It also addresses standard A3.1.4 because once students have determined the value of the coins, they need to model division to figure out how many balloons could be purchased. A student would not have to total the value of the coins. He/she could just realize that 2 balloons may be bought for a dime, 5 for a quarter, and so on.

Practice Test Item 3 also relates to standard A2.1.6 because students need to identify coins by sight.

KEY ELEMENT 3. Estimation and Computation

PURPOSE

Understanding of operations and fluency in arithmetic computation and estimation is inseparable from number sense, and together they form the core of mathematics in the elementary grades. A student with understanding and fluency in estimation and computation will:

- understand various meanings of addition and subtraction of whole numbers,
- understand the relationship between addition and subtraction,
- understand situations involving multiplication and division, and
- recall and use basic number combinations for addition and subtraction.

SUGGESTED ACTIVITIES

PERFORMANCE STANDARD: A3.1.1

Students can make reasonable estimates of “how many” and “how much”; they can estimate the results of simple addition and subtraction problems.

Making reasonable estimates

- Practice estimation with everyday situations at home and school. (How many times a day does your refrigerator door open? How many pages are in your dictionary? How long does it take to get to school?)

PERFORMANCE STANDARD: A3.1.2

Students can recall and use basic addition and subtraction facts orally and with paper and pencil without a calculator.

Recalling basic addition and subtraction facts

- Using stamps or playing cards perform mental computation using compatible numbers (for example, pairs of numbers that total 10).
- Have students chain computations together when adding, and find efficient solutions such as inverse relationships and compatible numbers.

PERFORMANCE STANDARD: A3.1.3

Students can add and subtract whole numbers to 100 using a variety of models and algorithms.

Adding and subtracting whole numbers to 100

- Build understanding in contexts such as student-initiated activities, teacher-created stories, scorekeeping, and situations that emerge in children’s literature.
- Have students explain their written work, solutions, and mental processes.

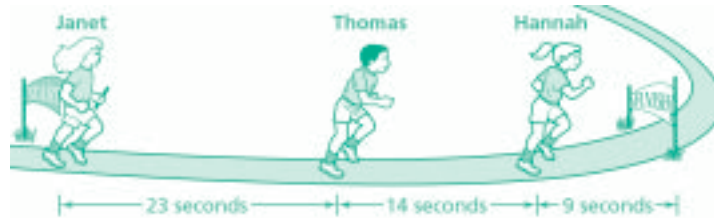
PERFORMANCE STANDARD: A3.1.4

Students can model multiplication as repeated addition and grouping of objects; they can model division as “sharing equally” and grouping objects.

PERFORMANCE STANDARDS: A3.1.5 and A3.1.6

SAMPLE PRACTICE QUESTION

12. Janet, Thomas, and Hannah each ran one part of a relay race. The time it took them to run each part of the race is shown below.



How many seconds did it take Janet, Thomas, and Hannah to run the race from start to finish?

- (A) 36 (B) 37 (C) 46 (D) 47

Comments: Practice Test item 12 relates to standard A3.1.3 because students need to add a series of whole numbers. Practice Test item 9 also relates to standard A3.1.3 because after recording and organizing their data, students must subtract the number of broken shells from the total.

Modeling multiplication and division

- Create classroom situations in which students deal with distribution, sharing, and grouping.
- Explore strategies used to solve problems involving multiplication and division.

SAMPLE PRACTICE QUESTION

13. Sandy's mother uses strips of tape to hang Sandy's pictures so they will stick to the wall. It takes 4 strips of tape to hang one picture. How many strips of tape will Sandy's mother need to hang 6 pictures.

- (A) 10
(B) 18
(C) 24
(D) 30



Comments: Practice Test item 13 relates to standard A3.1.4 because students need to use multiplication or repeated addition to solve the problem. Practice Test item 14 also relates to standard A3.1.3 because students could use addition to solve the problem. Standard A3.1.4 would be addressed if students were to multiply the number of objects by their value.

Practice Test item 15 relates to standard A2.1.6 because students need to determine the value of a given set of coins, but standard A3.1.4 is also addressed because once students have determined the value of the coins, they need to model division to figure out how many balloons could be purchased. Students would not have to total the value of the coins. They could just realize that 2 balloons may be bought for a dime, 5 for a quarter, and so on.

There are no performance standards in these areas for ages 5-7.

KEY ELEMENT 4. Functions and Relationships

PURPOSE

Students become problem solvers and abstract thinkers as they learn to see relationships, find connections, and make generalizations and predictions through the study of patterns. A student competent in looking at relationships will:

- sort, classify, and order objects by size, number, and other properties;
- recognize, describe, and extend patterns;
- analyze how both repeating and growing patterns are generated;
- create a table and organize data to illustrate a pattern and make predictions;
- model situations involving comparisons using objects, pictures, and symbols.

SUGGESTED ACTIVITIES

PERFORMANCE STANDARD: A4.1.1

Students can recognize, describe, create, and extend repeating and increasing patterns with a variety of materials including symbols, objects, and manipulatives.

Identifying and creating patterns

- Use a 0-99 chart to display, identify, and extend patterns such as even numbers.
- Have students demonstrate patterns such as sit-stand-sit, boy-girl-boy, snap-clap-snap.
- Have students use pictures (stamps, templates) and symbols to illustrate patterns.
- Identify patterns on the calendar.
- Build patterns with unifix cubes, pattern blocks, or buttons. Have students extend patterns and describe them orally or in writing.

SAMPLE PRACTICE QUESTION

5. Ted is using small tiles to make the patterns shown below.



How many small tiles will Ted need to make the next large square in the pattern?

Answer: _____ small tiles

On the lines below, explain in words how you found the number of small tiles Ted will need.

Comments: Practice Test item 5 relates to standard A4.1.1 because students need to recognize and describe a repeating pattern. The process standard of communication is also addressed because students need to write an explanation of what the pattern is and how they found it. Practice Test items 4 and 10 also relate to standard A4.1.1 because students need to recognize and extend a repeating pattern. Item 10 also addresses standard A4.1.2 because students need to use subtraction to discover the next number in the sequence.

PERFORMANCE STANDARD: A4.1.2

Students can generate and solve simple functions by identifying and applying addition and subtraction patterns.

PERFORMANCE STANDARD: A4.1.3

Students can use a calculator to find and extend patterns in the number system.

PERFORMANCE STANDARD: A4.1.4

PERFORMANCE STANDARD: A4.1.5

Students can complete open space sentences with missing numbers; they can use appropriate vocabulary including *greater than*, *less than*, and *equal to*; and they use the correct symbols.

Using patterns to solve simple functions

- Play “What’s my rule?” and make a life-size “Magic Function Box” with *in* and *out* windows. Have students take turns being the “rule maker” inside the box, and the “rule guesser” outside the box.
- Analyze, extend, and describe patterns numerically. Have students:
 - work in groups of two or three to extend the first three terms of a pattern that the teacher provides
 - use manipulatives to copy and extend the pattern for several more terms
 - record the term number above each object and the number of objects in each term below. When the objects are removed a horizontal table of values has been created.
- Have students repeat the activity above but create their own patterns and describe them to the class.
- After identifying patterns on the 100’s chart, have students try to reassemble a chart that has been cut into puzzle pieces. A follow-up activity is to give students similar puzzle pieces with at least one number written on each piece. Challenge students to fill in the blanks.

Using a calculator to find and extend patterns

- Show students how to count with their calculators. Tell them to push “+, 1, =.” The number one will appear. Next have them push “=” again. Discuss what is happening. Try “+, 5, =” Have students discuss how to have the calculator count by 10, etc.

There is no performance standard in this area for ages 5-7.

Completing open sentences

- Have students identify all students who fit in the open space: Height of _____ > height of Sally, and height of _____ < height of Sally. Other things to compare: age, shoe size, area of a table top, volume of a tea cup, etc.
- Have students color in various inequalities on a number chart (for example, color all numbers >70). This could be extended to the number line.

KEY ELEMENT 5. Geometry

PURPOSE

Students use geometric ideas to become proficient in describing, representing, and navigating their environment. (*NCTM Principles and Standards for School Mathematics, 2000*, p 97) A student competent in geometry will:

- recognize shapes and their properties,
- interpret relative position in space and apply ideas about direction and distance, and
- recognize transformations and symmetry in shapes.

SUGGESTED ACTIVITIES

PERFORMANCE STANDARD: A5.1.1

Students can identify, sort, describe, model, and compare circles, triangles, and rectangles including squares, regardless of orientation.

Identifying and comparing simple plane geometric shapes

- Have students suggest ways to sort and classify attribute and pattern blocks (regardless of color).
- Choose three or four attribute blocks and put them into a bag. Invite the children to feel the objects without looking. When all children have had an opportunity to feel the objects, have them give their opinions about the contents of the bag. Open the bag and discuss the accuracy of student opinions. Extension: Describe a particular block and have children reach into the bag without looking and retrieve a block that fits your description.

SAMPLE PRACTICE QUESTION

6. Carla drew a shape on paper. She wrote the 2 sentences below about the shape.

It has 3 sides.

It has 3 angles.

Which of these shapes did Carla draw?

- Ⓐ rectangle
- Ⓑ triangle
- Ⓒ square
- Ⓓ circle

Comments: Practice Test item 6 relates to standard A5.1.1 because students need to identify shapes from a given description.

PERFORMANCE STANDARD: A5.1.2

Students can identify, sort, describe, model, and compare solid figures including cubes, cylinders, and spheres.

Identifying and comparing solid geometric shapes

- Sort and classify common solid shapes such as a tissue box, a tuna can, a funnel, a ball, dice, etc.
- Have students copy rectangular solids using straws and pipe cleaners (an activity sometimes called, “skeletons of the solid”). Describe and compare the number of edges and corners, the number of edges that meet at a corner, and so on.

PERFORMANCE STANDARD: A5.1.3

Students can identify and create examples of line symmetry; they can compare and describe given circles, triangles, and rectangles as larger, smaller, or congruent.

Understanding line symmetry and congruence

- Have students paint a design on one half of a folded piece of paper, then refold the paper, press its folded sides together, and open it to reveal a symmetrical design.
- Have students create a shape with pattern blocks that lie along a line. Have a partner match the design creating a symmetrical shape.

SAMPLE PRACTICE QUESTION

7. Which figure below has at least one line of symmetry?

Ⓐ



Ⓑ



Ⓒ



Ⓓ



Comments: Practice Test item 7 relates to standard A5.1.3 because students need to identify shapes that have line symmetry.

PERFORMANCE STANDARD: A5.1.4

Students can demonstrate conservation of area using drawings or manipulatives.

PERFORMANCE STANDARD: A5.1.5

Students can describe and identify geometric transformations including slides, flips, and turns.

PERFORMANCE STANDARD: A5.1.6

Students can use comparative directional and positional words: above, below, inside, outside, on, in, right and left, horizontal, vertical, and middle.

PERFORMANCE STANDARD: A5.1.7

Students can draw and build familiar shapes.

Demonstrating conservation of area

- Investigate “Mystery Shapes.” Teacher creates a shape out of rectangles and triangles cut from a square piece of paper. The students are told how many pieces the teacher’s square was cut into. Students are then given a square piece of paper and asked to reproduce the teacher’s shape. Discuss different strategies students used.
- Have students complete tangram puzzles. Discuss how area remains the same for each figure.

Describing geometric transformations

- Using pattern blocks, rotate the shapes and identify them.
- Have students use themselves, stuffed animals, or cards representing themselves (face down on one side and face up on the other) to illustrate slides, flips, and turns. Have students lie on the floor and give their own interpretations of slides, flips, and turns. Have them try flipping about their right side, left side, and their feet. Which flips or slides are most difficult? Easiest? Is a somersault a flip? If rolling is a flip, what is a turn? Have students demonstrate with cards and stuffed animals as well. (*NCTM Addenda Series, Grades K-6: Geometry and Spatial Sense* p 18-20 or *Second-Grade Book* p 26-28)

Using directional and positional words

- Using a paper cut-out, puppet, or doll, position the cut-out or object relative to your hand. Ask students to describe the position of your hand relative to the object, such as above, below, left, right, behind. Next, place the object somewhere in the classroom and have children use words to describe its position and location, such as, on top of the bookcase, behind the door, to the right of the plants. Then give students similar objects and ask them to position their objects according to your descriptions, such as: the object is below your chin, the object is lying face down, the object is behind you.

Building familiar shapes

- Make several shapes on the geoboard with one rubber band that does not cross over itself. Copy the shapes onto dot paper and cut them out. To vary the activity, give directions such as:
 - make three-sided shapes or make shapes with square corners
 - vary the scale of the dot paper
 - make shapes that represent real objects and have students guess each other’s object.
- Have students use building blocks or pattern blocks to create and build familiar shapes.

KEY ELEMENT 6. Statistics and Probability

PURPOSE

The skills necessary to becoming informed citizens and intelligent consumers include an ability to reason statistically. These skills involve data analysis and aspects of probability. Students competent in statistics and probability will:

- use data to describe the world around them,
- organize and represent data sets,
- notice individual aspects of data and what value occurs most frequently, and
- perform simple probability experiments.

SUGGESTED ACTIVITIES

PERFORMANCE STANDARD: A6.1.1

Students can collect, record, organize, display, and explain the classification of data.

Displaying data

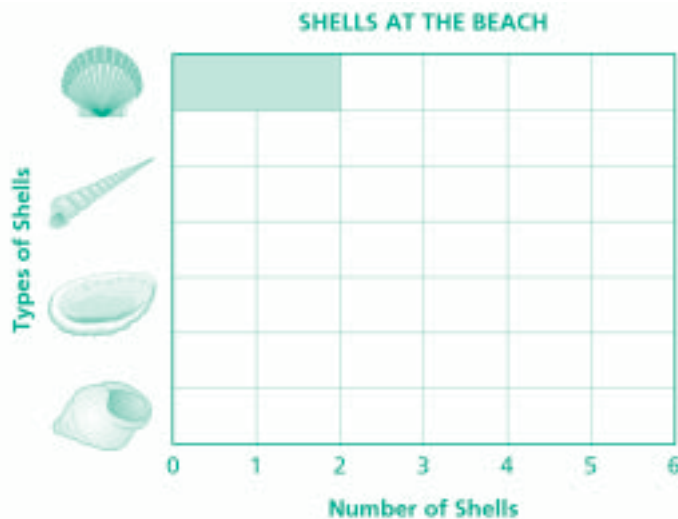
- Using an unfair die with one red side and five white sides, play a game where one player is red and one is white. Players take turns moving along a game board to a finish line. The players record the number of wins for each color by creating a pictograph of red and white squares. How do the red and white wins compare? From the class graph, do you think the die is fair or unfair?

SAMPLE PRACTICE QUESTION

9. Maria went to the beach and collected 4 different types of seashells.



Complete the bar graph below to show the number of seashells Maria collected. The first one has been done for you.



When Maria got home she found that **all** of her shells like the one shown below had broken



Using the graph, write how many **unbroken** shells Maria had left.

Answer: _____ **unbroken shells**

Comments: Practice Test item 9 relates to standard A6.1.1 because students need to record, organize, and display data involving four different kinds of shells. This item also relates to standard A3.1.3 because students must subtract the number of broken shells from the total.

PERFORMANCE STANDARD: A6.1.2

Students can describe data from a variety of visual displays including tallies, tables, pictographs, bar graphs, and Venn diagrams.

PERFORMANCE STANDARD: A6.1.3

Students can use the terms “maximum” and “minimum” when working with a data set.

PERFORMANCE STANDARD: A6.1.4**PERFORMANCE STANDARD: A6.1.5**

Students can find and record the possibilities of simple probability experiments; they can explain differences between chance and certainty, giving examples.

PERFORMANCE STANDARD: A6.1.6

Students can conduct a survey and tally the results.

Describing data

- Use a Venn diagram for daily attendance. Have students respond to a question by placing their name tags in the appropriate place. Use questions such as “What ice cream flavors do you like—chocolate, vanilla, and/or strawberry?” or “Do you have blue eyes and/or curly hair?” Variation: use questions appropriate to a bar graph such as “How many siblings do you have?” or “In what month is your birthday?”

Using the terms “maximum” and “minimum”

- Use strips of paper divided into 10 sections large enough for students to write a letter in each section. Make some strips white and some gray. Have students write their names, one letter to a section, and tape the sections together alternating white and gray strips. Have children write their names on the strips. Each child, with a different colored crayon, should begin where the previous child ended. A group of four students puts their names on one strip. Compare the lengths of the strips from different groups. Ask questions about the number of tens and ones in each group, which group had the fewest letters, and did this group have the person with the shortest name.

There is no performance standard in this area for ages 5-7.

Conducting simple probability experiments

- Make a peek box by cutting one corner off a small box. Put 10 marbles or cubes of two different colors into the box. Tell the students there are 10 objects of two colors in the box. Have students shake the box, peek into the corner, and record the color that shows. Students then guess how many objects are one color or the other and explain why they think so. Do this several times. Ask “Does your prediction change?” and “Why?” Variation: change the ratio of colors, including use of one color only.

SAMPLE PRACTICE QUESTION

8. Scott will toss one coin 20 times. Which of these sentences below will always be true?
- Ⓐ The coin will land on heads or tails.
 - Ⓑ The coin is certain to land on heads all 20 times.
 - Ⓒ The coin is certain to land on tails all 20 times.
 - Ⓓ The coin will land on heads exactly once.

Comments: Practice Test item 8 relates to standard A6.1.5 because students recognize the possible outcomes of the simple probability experiment of tossing a coin 20 times.

Conducting a survey and tallying the results

- Using four pictures of bears ask “Which bear does the class like?” Each student is called to a chart and marks a tally mark under his or her favorite. The last one up counts the marks and writes the total. Ask “How did the tallying help answer the question?” and “How would you collect this data for the whole school?” Have students draw pictures of their favorite bears, then take their pictures and stand in line, making a people graph. Have students place their pictures on the ground in their spots, creating a bar graph. Ask “What does the bar graph tell you?” and “How is the bar graph similar to the people graph and the tally?”



PART FOUR

Glossaries and Resources for Teachers

GLOSSARY—READING & WRITING

affix	a morpheme, or meaningful linguistic unit, that changes the meaning or function of a root or stem to which it is attached. In the word <i>adjoining</i> , for example, there are two affixes: the prefix <i>ad-</i> and the suffix <i>-ing</i> .
alphabetic principle	the assumption underlying alphabetic writing systems that each speech sound or phoneme of a language should have its own distinctive graphic representation
assertion	a declaration or positive statement of belief or opinion
cite	to quote as an authority; to give credit to those whose ideas or quotations are used in one's written or oral communications
composition	a short essay, usually produced as a school assignment
comprehension	as related to reading, the act of grasping the meaning of printed text. Involves understanding the literal meaning (<i>literal comprehension</i>), interpreting the suggested meaning (<i>inferential comprehension</i>), and evaluating what is read.
context clues	information from the immediate textual setting that helps identify a word. Used to help decode words being read for the first time; to resolve ambiguity (Does the word <i>duck</i> in this sentence mean an animal or the act of bending over?); and to confirm the accuracy of decoding (Does this word or group of words make sense and does it sound right?). When used with words that are already known, context clues help resolve which shade of meaning is intended in a particular situation (Is the word <i>progress</i> used as a noun or a verb?).
conventions	sets of rules or accepted practices in spoken or written language; commonly used to refer to spelling, punctuation, capitalization in writing
description	one of the four traditional forms of composition in speech and writing; meant to give a verbal picture of characters and events, including the setting in which they occur
discourse	a conversation; the act or result of making a formal written or spoken presentation on a subject, as in learned discourse or literacy; in linguistics, any form of oral or written communication more extensive than a sentence
edit	to revise or correct a manuscript. Generally used in the writing process to refer to correction of the mechanical features of writing such as spelling, punctuation, capitalization, etc., as part of the production of final drafts or preparation for publication. There are other levels of editing that focus on such qualities as organization, factual accuracy, consistency of tone, etc. (See <i>revise</i> .)
exposition	one of the four traditional forms of composition in speech and writing; intended to set forth or explain. Good exposition is clear in conception, well organized, and understandable. It may include limited amounts of argumentation, description, and narration to achieve this purpose.
expressive writing	highly personal writing, as in diaries, personal letters, autobiographies, etc.
fluency	the clear, easy expression of ideas in writing or speaking; freedom from problems or awkwardness that might hinder comprehension in silent reading or the expression of ideas in oral reading
four modes	the traditional forms of composition in speech and writing: exposition, narration, persuasion, and description (See definitions under each of these terms.)
genre	an established category of literature defined by its style, form, and/or content; short story, novel, drama, or poetry, for example
grammar	the system of rules that is generally accepted by a language community; includes inflection, word order, the structural aspects of sentences, and usage

high frequency words	words that appear many more times than most other words in spoken or written language. Basic word lists generally provide words ranked by their frequency of occurrence as calculated from a sample of written or spoken text suitable for the level of intended use.
infer	as related to inferential comprehension, to interpret meaning beyond the literal level of the text; to “read between the lines” and reach a conclusion or understanding based on evidence provided in the text
literal	as related to literal comprehension, meaning explicitly stated in the text
main idea	the gist of a passage; its central thought
narration (narrative)	one of the four traditional forms of composition in speech and writing; tells a story or gives an account of something, dealing with sequences of events and experiences, though not necessarily in strict order
persuasion (persuasive writing)	one of the four traditional forms of composition in speech and writing; meant to move the reader to a belief or proposition by using argument or entreaty
phoneme	a minimal sound unit of speech that, when contrasted with another phoneme, distinguishes words in a language. For example, <i>b</i> in <i>book</i> contrasts with <i>t</i> in <i>took</i> , <i>c</i> in <i>cook</i> , <i>h</i> in <i>hook</i> .
phonics	a system of teaching reading and spelling that stresses basic symbol-sound relationships and their application in decoding words; used especially in beginning instruction
phonemic awareness	awareness of the sounds (<i>phonemes</i>) that make up spoken words. Such awareness does not appear when young children learn to talk; it is not necessary for speaking and understanding spoken language. However, phonemic awareness is important for learning to read. In alphabetic languages, letters (and letter clusters) represent phonemes, and in order to learn the correspondences between letters and sounds, one must have some understanding of the notion that words are made up of phonemes.
phonetics	the study of speech sounds and their transcription into written form
point of view	the perspective from which an author tells his or her story. An author using an omniscient point of view knows and tells all, usually through the voice of a narrator. An author using a more restricted point of view may tell the story through, and from the perspective of, only one character.
prefix	an affix attached to the beginning of a word, such as <i>dis</i> in <i>discontinue</i>
pre-writing	the initial creative stage of writing, prior to drafting, in which the writer formulates ideas, gathers information, and considers ways to organize the writing
prior knowledge	knowledge that stems from previous experience. Prior knowledge is a key component of schema theories of reading comprehension.
readers' theater	performance of a story, play, or poetry in which one or more readers take the parts of characters and read rather than act out the parts, much like a radio play
revise	to make structural or content changes to a manuscript in order to improve clarity and effectiveness
root word	the meaningful base form of a complex word after all affixes are removed. A root may be independent (able to stand alone), like <i>read</i> in <i>unreadable</i> , or it may be dependent (unable to stand alone), like <i>-liter-</i> (from the Greek for <i>letter</i>) in <i>illiterate</i> .
semantics	the study of language that focuses on the meanings of words, phrases, sentences, paragraphs, and whole pieces of writing
sentences (three basic kinds)	declarative makes a statement exclamatory makes a vehement statement or conveys strong or sudden emotion interrogative asks a question or makes an inquiry
sight recognition	the immediate recognition of a word as a whole (See <i>sight word</i>)

sight word	a word that is immediately recognized as a whole and does not require word analysis for identification
syntax	the way in which words are put together to form phrases, clauses, or sentences
suffix	an affix at the end of a word, such as <i>ing</i> in <i>fixing</i>
T chart	a table that helps students organize their thinking by listing two things being compared in adjacent columns. When the name of one thing and its qualities are listed in one column, and the name of the other and its qualities are listed in an adjacent column, it becomes easy for students to see how the things are alike and different and to organize their writing accordingly.
text	a written or spoken piece in its entirety. Text also refers to the body of a piece, excluding headings, titles, etc., or to a textbook used in a school course. In this document, it is used to refer to any piece of literature, fiction or non-fiction.
theme	a topic of discussion or writing; a major idea or proposition broad enough to cover the entire scope of a literary or other work of art. A theme may be stated or implicit, but clues to it may be found in the ideas that are given special prominence or tend to recur in a work.
thesis	the basic argument advanced by a speaker or writer who then attempts to prove it; the subject or major argument of a speech or composition
thesis statement	a sentence that presents the central argument or main idea of a speech or composition
tone	the author's attitude as reflected in his or her writing style in a particular piece. Tone may be sarcastic, humorous, serious, playful, for example.
topic	a general category or class of ideas, often stated in a word or phrase, to which the ideas of a passage belong
topic sentence	a sentence that expresses the main idea in a paragraph or passage
usage	the usual, generally accepted way in which words and phrases are used within a given language community
Venn diagram	a graph or simple picture that uses overlapping circles to show relationships. Words, qualities, etc. may be placed inside separate circles or in the area(s) where circles overlap, showing what they do or do not have in common.
voice	a syntactic pattern that indicates the verb-subject relationship. The principal voices in English and many other languages are active (as in <i>He hit the ball.</i>) and passive (as in <i>The ball was hit.</i>). Also, an author's distinctive way of using language, tone, and other qualities.
word family	a group of words sharing the same root word or a common phonic element. <i>Television</i> , <i>telephone</i> , and <i>telepathy</i> are part of the <i>tele_</i> family. <i>Cat</i> , <i>hat</i> , and <i>mat</i> are part of the <i>_at</i> word family.
word recognition	the process of determining the pronunciation and some degree of meaning in a written word; the quick and easy identification of the form, pronunciation, and appropriate meaning of a word previously encountered in print or writing

RESOURCES—READING & WRITING

PUBLICATIONS

(These publications were distributed to schools or are available from the Alaska Department of Education & Early Development.)

Alaska Department of Education & Early Development Reading Booklets:

1. *On the Threshold: How Your Child Develops Birth to Five Years*
2. *Opening the Door: What Families and Teachers Can Do to Help Every Child Become a Reader*
3. *Unlocking the Door: Current Research on How Children Learn to Read*

Alaska Department of Education & Early Development: *Language Arts Frameworks*. (This document is not current, but many of the classroom suggestions and resources are still quite useful and timely. It is also available on the EED web site at: <http://www.eed.state.ak.us/tls/frameworks/langarts/1title.htm>)

Building a Knowledge Base in Reading. Jane Braunger and Jan Lewis, Northwest Regional Educational Laboratory: Portland, Oregon (1997).

Guidelines for Teaching Middle and High School Students to Read and Write Well: Six Features of Effective Instruction. Judith A. Langer, National Research Center on English Learning and Achievement: Albany, New York (2000).

Title I Resource Guide: A collection of essential school improvement resources. The Comprehensive Centers Network and The National Association of State Title I Directors.

WEB SITES

Alaska Department of Education and Early Development
<http://www.eed.state.ak.us>

International Reading Association
<http://www.reading.org>

National Council of Teachers of English
<http://www.ncte.org>

Alaska Native Curriculum and Teacher Development Project
<http://www.alaskool.org>

Alaska Native Knowledge Network
<http://www.ankn.uaf.edu>

Alaska State Literacy Association
<http://www.asd.k12.ak.us/depts/reading/index.htm>

Alaska State Writing Consortium
<http://pec.jun.alaska.edu/aswcpage.html>

LitSite Alaska
<http://litsite.alaska.edu>

Northwest Regional Educational Laboratory: 6 + 1 Traits Writing Page
<http://www.nwrel.org/eval/writing/>

Northwest Regional Educational Laboratory: Traits of an Effective Reader
<http://www.nwrel.org/eval/reading/>

**WestEd Regional Educational Laboratory:
Strategic Literacy Initiative for Middle and Secondary Students**
<http://www.WestEd.org/stratlit/ideas/ideas.shtml>

**Proofreading Symbols and Terminology—
Capital Community College**
<http://webster.commnet.edu/writing/symbols.htm>

**Guide to Grammar & Writing—
Capital Community College**
<http://ccc.commnet.edu/grammar/index2.stm>

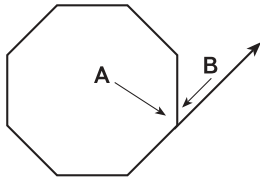
**Social Studies Teacher Resources—
University of Virginia, Curry School of Education**
<http://curry.edschool.virginia.edu/teacherlink/social/resources>

GLOSSARY—MATHEMATICS

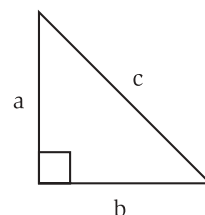
absolute value	the number of units a number is from zero on a number line
abstract context	a problem or statement without reference to a real-world application
accuracy	exactness; correctness
acute angle	an angle whose measure is between 0 degrees and 90 degrees
algebraic expression	a collection of variables (letters) and constants (numerals) that are combined using addition, subtraction, multiplication, division, and radicals or fractional exponents
algebraically	designating an expression, equation, or function in which numbers, letters, and arithmetic operations are contained or used
algorithm	a systematic procedure which, if followed, accomplishes a particular task
associative	An operation (*) is said to be associative if it does not matter where parentheses are placed when three elements are combined. For example, $(a * b) * c = a * (b * c)$ is true if * is associative.
attribute	a distinctive feature or characteristic
base system	a place value system in which the base is a number that is raised to various powers to generate the principal counting units of the number system. For example, 123 in base 10 is $1 \times 10^2 + 2 \times 10^1 + 3 \times 10^0$. 123 in base 5 is $1 \times 5^2 + 2 \times 5^1 + 3 \times 5^0$.
basic operations	the operations of addition, subtraction, multiplication and division
bisector	something that divides a thing into two equal parts
box and whisker plots	graphs that show how far apart and how evenly data are distributed. For example: <div data-bbox="609 1012 1258 1192" data-label="Figure"> <p>The figure is a box and whisker plot on a horizontal number line ranging from 14 to 30 with tick marks every 1 unit. The plot consists of a central box with a vertical line inside, and horizontal whiskers extending to dots at each end. Labels with arrows point to these features: 'lower extreme' points to the dot at 15, 'lower quartile' points to the left edge of the box at 19, 'median' points to the vertical line inside the box at 22, 'upper quartile' points to the right edge of the box at 25, and 'upper extreme' points to the dot at 29.</p> </div>
cardinal number	a number, such as 3 or 11 or 412, used to indicate quantity but not order
chart	a presentation of information in the form of graphs or tables
chord	a line segment joining two points on a circle
commutative	The operation * on a set is commutative if $a * b = b * a$ for all members of a set
compass directions	geographical directions in reference to the earth, such as north, south, east, west
compatible numbers	pairs of numbers that work in combination with other numbers (for example, 219 divided by 69 is about 21 divided by 7)
composite number	a whole number, greater than 0, that has more than two whole number factors
concrete representation	a representation or statement presented in the context of a real world application (for example, a number sentence from a word problem)
congruent	having the same shape and size
conservation of area	keeping the area measure of a shape the same even though the shape changes dimensions
coordinate geometry	geometry in which conclusions are drawn based on information about figures located on a coordinate plane
coordinate plane	the plane formed by two perpendicular number lines called <i>axes</i>

coordinates	numbers in an <i>ordered pair</i> ; that is, a pair of numbers that describes a point on a graph with reference to the x (horizontal) and y (vertical) axes
counterexamples	examples that prove a statement to be untrue
curve fitting	finding the equation of a curve that best describes a given set of points
deductive reasoning	the process of demonstrating that if certain statements (axioms, postulates, theorems) are accepted as true then other statements can be proved to follow from them. A good rule of thumb when thinking of deductive reasoning is to view it as applying <i>general</i> cases to prove a <i>specific</i> case.
degree of accuracy	a pre-specified level of exactness or correctness
direct proof	proof that a statement is true by the use of deductive reasoning
distributive	having the property that multiplying a sum by a number gives the same result as multiplying each addend by the number and then adding the products. For example: $a(b + c) = a \times b + a \times c \quad 3(4 + 5) = 3 \times 4 + 3 \times 5$ $3(a + b) = 3a + 3b$
divisibility	capability of being divided with no remainder (for example, the number 21 is divisible by 7)
dodecahedron	a solid shape with twelve faces. All the faces of a regular dodecahedron are regular pentagons.
equation	a mathematical sentence that uses an equals sign (=) to show that two quantities are equal
equivalent fractions	fractions that name the same number, such as $\frac{2}{4}$ and $\frac{1}{2}$
equivalent representations	equal numbers or expressions that are represented in different forms such as fractions, decimals, percents, scientific notation and exponents (for example: $\frac{1}{2} = .5 = 50\%$)
error	the difference between an estimated solution and the exact solution
Euclidean geometry	geometry in which conclusions are drawn based on the propositions given by the Greek geometer Euclid around 250 B.C.
even numbers	numbers ending in 0 or 2 or 4 or 6 or 8; that is, numbers that are multiples of 2
experimental probability	the probability associated with the outcome of an actual experiment; the ratio of the number of times an event occurs in an experiment to the total number of outcomes
exponent	the number that indicates how many times the base is used as a factor. For example, in the equation $2^3 = 2 \times 2 \times 2 = 8$, the exponent is 3, indicating that 2 is used as a factor three times
exponential	containing, describing, or involving an exponent
expression	a mathematical phrase that uses numbers, variables, and operation symbols to represent a value
exterior angle	an angle that forms a linear pair with an interior angle of a polygon. For example, in the diagram below, angle B is an exterior angle <div data-bbox="492 1648 763 1837" data-label="Image"> </div>
factors	numbers that divide exactly into another number; any of two or more whole numbers that are multiplied to form a product (for example, 1, 2, 4, and 8 are factors of 8)

Fibonacci Numbers	numbers in the following sequence: 1, 1, 2, 3, 5, 8, 13, 21, . . . After the first two 1's, each number is the sum of the two immediately preceding it.
finite graphs	graphs on the coordinate plane having an upper and a lower boundary
formula	a rule that is expressed using variables, symbols and/or numbers (for example, $A = \pi r^2$ or $P = 2(L + W)$)
Four (or basic) Operations	the mathematical operations of addition, subtraction, multiplication, and division
frequency distribution	a set of intervals or increments, usually adjacent and of equal width, into which the range of a statistical distribution is divided; a table that pairs each item in a set of data with the number of times that item occurs
front-end estimation	a close calculation that involves rounding numbers to their highest place to arrive at an approximate value
function	a relationship between two quantities in which the value of one quantity is uniquely determined by the value of the other quantity. Each element in the domain (<i>input</i>) is matched with exactly one element of the range (<i>output</i>).
geometric figure	a shape having geometric properties such as length, width, area, etc.
geometric model	a representation of a real-world situation using geometric shapes
geometric sequence	an ordered list of numbers that has a common ratio between successive terms. Each successive term is formed by multiplying the preceding term by the common ratio (for example, 1, 3, 9, 27, . . . is a geometric sequence with a common ratio of 3)
geometric shapes	plane or solid figures having geometric properties
graphic representations	charts, diagrams, tables, graphs, or other pictorial representations of mathematical ideas
graphically	using a graphic representation to illustrate a mathematics problem
guess and check	a problem-solving strategy in which a guess is offered and then checked for accuracy
histogram	a representation of a frequency distribution by means of contiguous bars whose width represents equal intervals and whose height represents the frequency of data values (a bar graph, for example)
identity	the property by which adding 0 to any number results in a sum identical to the given number; and the property by which multiplying 1 by any number results in a product identical to the given number
independent events	events in which the outcome of one event is not affected by the outcome of another event. These are opposed to <i>dependent events</i> , in which the outcome of one event <i>is</i> affected by the outcome of another event. For example, drawing a card from a deck of cards and replacing it, then drawing a second card, are independent events. Drawing a card and not replacing it, and then drawing a second card, are dependent events.
indirect measurements	measurements determined by methods other than the use of measurement tools (for example, calculating a distance using the Pythagorean Theorem, similar figures, or trig ratios)
indirect proof	proof by contradiction
inductive reasoning	the process of observing data, recognizing patterns, and making generalizations from the observations. A good rule of thumb for remembering the process of induction is that one moves from <i>specific</i> cases to a <i>general</i> rule.
inequality	one quality not being equal to another. A mathematical sentence that shows the relationship between quantities that are not equal may use symbols such as $<$, $>$, $<=$, $>=$, \neq .

interior angle	an angle formed within a polygon by the intersection of two sides. For example, in the diagram below, angle A is an interior angle.
	
irregular polygon	a multi-sided closed figure whose sides and angles are not congruent
iteration	the process of repeating the same procedure over and over again
line of symmetry	a line that divides a figure into two congruent parts
linear	relating to a function that has a constant rate of change and can be modeled by a straight line
linear equation	an equation whose graph is a line. Examples: $y = x + 9$, $3x - 2y = 10$, $y = -4$ Counterexamples: $y = 3x^2 + 6$, $4xy = 12$, $1/y = 4x$
manipulatives	any of a wide variety of physical materials and objects that students may use to foster the learning of abstract ideas in math
mathematical problem-solving strategies	strategies used to solve problems (for example, drawing a picture, “guess and check,” looking for a pattern, making an organized list, making a table or chart, solving a simpler problem, working backward, using manipulatives, acting it out)
matrix	a rectangular array of numbers (plural is <i>matrices</i>). Potential uses include spreadsheets, transformations, linear algebra.
mean	the arithmetic mean, or average; the sum of a set of n numbers divided by n
measure of center	(in statistics) a single score that can best represent a whole set of data (for example, the mean, mode, or median of a data set)
measuring tools	tools used to measure length, capacity, weight, mass, degree, etc.
median	the value of the middle number in an ordered set of data, or the average of the two middle numbers in a set
Metric System	a system of measure whose basic units are: meter for length, liter for capacity, gram for mass, and degrees Celsius for temperature
mode	the “most popular” value, or the most frequently occurring item in a set of data
model	a representation of something in the real world that uses geometry, algebra, or other mathematics
multiple	the product of a number and a whole number (for example, multiples of 8 are 8, 16, 24, 32...)
non-standard units	measuring units that are not Metric or U.S. Customary System measuring units
number sequence	an ordered list of numbers
number system	a group of interacting, interrelated, or interdependent elements grouped together for classification or analysis. For example, the base 10 system.
number theory	the study of characteristics of numbers such as primes, composites, factors, multiples, etc.
numeric	expressed or counted by numbers
numerical representation	an expression that includes only numbers

obtuse angle	an angle whose measure is between 90 degrees and 180 degrees
odd numbers	numbers not divisible by 2. Odd numbers have 1, 3, 5, 7, or 9 in the ones' place
one-to one correspondence	the situation in which two sets of elements match, and each element from one set is paired with one and only one element from the other set
open sentence	a mathematical sentence in which at least one term is unknown (for example, $3 + \underline{\hspace{1cm}} = 5$, or $3 + a = 5$). An open sentence is neither true nor false.
operation	a way of combining elements in a set (for example, addition, subtraction, multiplication, division)
order	the arrangement of numbers in a sequence, such as smaller to larger, or larger to smaller
order of operations	the correct order of evaluating numerical expressions. First, do work in parentheses or brackets. Second, evaluate powers and roots. Third, do multiplication and division from left to right. Last, add and subtract from left to right.
ordered pair	a pair of numbers used to locate a point on the coordinate plane. The first number represents the position with reference to the x -axis (horizontal). The second number represents the position with reference to the y -axis (vertical).
ordinal numbers	numbers indicating position in a series or order. The ordinal numbers are <i>first</i> , <i>second</i> , <i>third</i> , etc.
Pascal's Triangle	a system of numbers triangularly arranged in rows that consist of the coefficients in the expansion of $(a + b)^n$ for $n = 0, 1, 2, 3, \dots$
pattern	the arrangement of numbers, pictures, etc. in an organized and predictable way
percent	a ratio whose second term is 100 (for example, 20:100, $20/100 = 20$ percent, or 20%)
perfect square	a number whose square root is a whole number
perpendicular	intersecting to form a right angle
pictograph	a graph that uses pictures to show and compare information
pictorial representation	a drawing or picture that represents data
place value	the value of a digit in a number, written in standard notation, as determined by its position. In a base 10 system, each place has a value ten times that of the place to its right and one-tenth the value of the place to its left.
plane figure	a figure whose points all lie on the same plane
polygon	A closed plane figure whose sides consist of three or more segments in the same plane that intersect only at their endpoints
polynomials	algebraic expressions with more than one term
power	the number of times that a number is used as a factor (for example, 2 to the power 5 is $2 \times 2 \times 2 \times 2 \times 2$ and is written 2^5)
precision	a property of measurement that is related to the unit of measure used. The smaller the unit of measure, the more <i>precise</i> the measurement is (for example, 27mm is more precise than 3 cm).
prime number	a number that has exactly two factors, itself and 1
proportion	an equation stating that two ratios are equal
Pythagorean Theorem	the proposition that for every right triangle, the sum of the areas of the squares on the legs equals the area of the square on the hypotenuse. In the diagram to the right, if a and b are the lengths of the legs, and c is the length of the hypotenuse, then $a^2 + b^2 = c^2$.



quadratic	a function or equation involving a variable raised to the second power, and no higher power. The general form of a quadratic equation is: $ax^2 + bx + c = 0$, where a , b , and c are real numbers and a is not equal to 0.
range	(in statistics) the difference between the greatest and the least numbers in a set of data
ratio	a comparison of two numbers or quantities (for example, 5 to 7, 5:7, or 5/7)
rational expression	a polynomial or a quotient of polynomials
rational number	any number that can be expressed as a ratio a/b when a and b are integers and $b \neq 0$.
ray	a part of a line that has one endpoint and extends endlessly in the other direction
real numbers	the set of numbers that includes all rational and irrational numbers
rectangular prism	a solid figure with parallel, congruent rectangular bases, and parallelograms as sides
regular polygon	a polygon that has all its sides the same length and all its angles the same size
relationship	a way of connecting sets of things, such as numbers or people
right angle	an angle with a measure of 90 degrees
right triangle trigonometry	the study of the relationship between angle measures and ratios of side lengths of right triangles. The common ratios are sine, cosine and tangent.
root	a number that when multiplied by itself an indicated number of times forms a product equal to a specified number. Also a solution to an equation. For example, a is the x th root of b if $a^x = b$.
rounding	the process of dropping digits to the right of the decimal point or removing non-zero digits to the left of the decimal point and replacing them with zeros
sample group	(in statistics) a representative portion of the population(s) from which information is gathered
sample space	a set of all the possible outcomes of an experiment
scale	a ratio that compares the dimensions of a model to the actual dimensions of an object
scale drawing	a drawing made so that all distances in the drawing are proportional to actual distances
scatter plot	a graph made by plotting points on a coordinate plane to show the relationship between two variables in a data set
scientific notation	the method of expressing a number as the product of a number from 1 up to, but not including, 10, and a power of 10 (for example, $483 = 4.83 \times 10^2$)
secant	a line that intersects a circle at two points
sequence	an ordered list of numbers
sets of equations	See <i>systems of equations</i>
similar	having the same shape but not necessarily the same size
skip count	to count by multiples (for example, 3, 6, 9, 12, ...)
slope of a line	the measure of the steepness of a line; that is, the ratio of vertical change to horizontal change
solid figure	a three dimensional figure such as a sphere, a cube, or a pyramid, etc.)
Standard System	(also known as the U.S. Customary System or U.S. System of measurement) a system that measures length in inches, feet, yards, and miles; capacity in cups, pints, quarts, and gallons; weight in ounces, pounds, and tons; and temperature in degrees Fahrenheit

standard units	U.S. Customary and/or Metric units of measure										
stem and leaf plot	<p>a method of organizing data from least to greatest using the digits of the greatest place value to group data</p> <p>Example:</p> <table> <tr> <th colspan="2">Number of Sit-Ups</th></tr> <tr> <th>Stem</th><th>Leaves</th></tr> <tr> <td>3</td><td>4 6 8 8</td></tr> <tr> <td>4</td><td>0 3 6 7 7</td></tr> <tr> <td>5</td><td>0 0 1 2</td></tr> </table> <p>Each tens digit is called the stem. →</p> <p>← The ones digits are called the leaves.</p>	Number of Sit-Ups		Stem	Leaves	3	4 6 8 8	4	0 3 6 7 7	5	0 0 1 2
Number of Sit-Ups											
Stem	Leaves										
3	4 6 8 8										
4	0 3 6 7 7										
5	0 0 1 2										
subset	If every element of a set B is also an element of the set A, then B is a subset of A.										
survey	(in statistics) a study that collects data from human respondents. Surveys are used to find out about people's characteristics, behaviors, interests, etc.										
symbolic	of, pertaining to, or expressed by a symbol or symbols										
symmetrical	having a line of symmetry, or correspondence in size, shape, and relative position										
system of equations	two or more linear equations used to determine a common solution										
systems (of measurement)	Metric Measure and U.S. Customary Measure										
table	an organized display of data using columns and rows to delineate categories of data										
tally	a mark used to record a number of acts or objects, most often in a series of five, consisting of four vertical lines crossed diagonally or horizontally by a fifth line										
tangent	a line intersecting a circle at only one point and perpendicular to the radius at that point										
tessellations	repeating patterns of congruent plane figures that completely cover a plane with no gaps or overlapping (like a mosaic)										
tetrahedron	a polyhedron with four triangular faces										
theoretical probability	the ratio of the number of times an event could occur to total possible outcomes										
transformation	a change in the size, shape, or position of a geometric figure (for example, a translation or slide, a reflection or flip, a rotation or turn, a dilation or enlargement or reduction)										
tree diagram	a branching diagram that shows all possible outcomes of an experiment										
triangular prism	a solid figure that has two parallel congruent triangular bases and parallelograms as sides										
truncating	cutting a number off abruptly rather than rounding it										
unit of measure	a precise quantity used to describe an attribute of an object. For example, inches, cm, feet, etc. are units of measure used to describe length. Quarts, gallons, liters are units of measure used to describe capacity.										
validity	the state in which a conclusion is correctly derived from premises										
variable	a letter or symbol used to represent one or more numbers in an expression, equation or inequality										
Venn diagram	a graph or picture that uses circles to show relationships between sets by inclusion, exclusion, or intersection of the circles										
vertex	a point where two or more rays or segments meet, where sides of a polygon meet, or where edges of a polyhedron meet (plural is <i>vertices</i>)										
whole numbers	the set whose numbers are zero and the counting numbers (for example, the numbers 0, 1, 2, 3 and so on)										

RESOURCES—MATHEMATICS

PUBLICATIONS

National Council of Teachers of Mathematics (NCTM) Curriculum and Evaluation Standards, 1989.

NCTM Addenda Series 1992.

(Available by strand for grades K-12 and by grade level for grades K-6)

NCTM Principles and Standards for School Mathematics, 2000.

NCTM Navigations Series, 2001.

NCTM magazines/bulletins: Teaching Children Mathematics, Mathematics Teaching in the Middle School, Mathematics Teacher, Dialogues, News Bulletin, Student Math Notes.

Books by Marilyn Burns

Books and videos by Bill Nye

Adding It Up: Helping Children Learn Mathematics, National Academy Press, Washington, D.C., 2001.

WEB SITES

<http://www.eed.state.ak.us/tls/mathconsortium/home.html/>

(Alaska Math Consortium)

<http://www.nctm.org/> (National Council of Teachers of Mathematics)

<http://www.illuminations.nctm.org>

<http://www.standards.nctm.org>

<http://forum.swarthmore.edu/> (Math Forum)

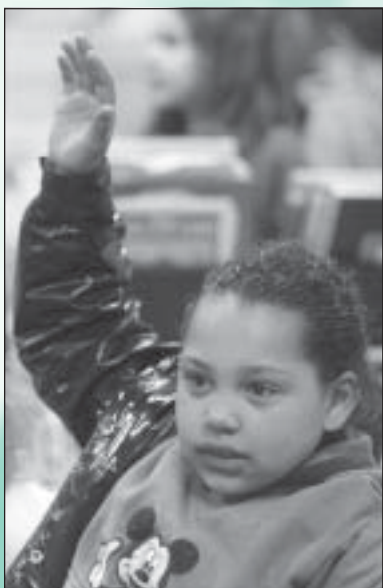
<http://www.lhs.berkeley.edu/> (Lawrence Hall of Science)

CATALOGS

Creative Publications

Dale Seymour Publications

Activity Resources Company



APPENDIX 1

Alaska Content and Performance Standards in Reading, Writing, and Mathematics

ALASKA CONTENT STANDARDS for English/Language Arts

The **CONTENT STANDARDS FOR ALASKA STUDENTS** were adopted by the Alaska State Board of Education in 1994 and 1995. The **ALASKA READING PERFORMANCE STANDARDS** support the sections of the English/Language Arts Content Standards listed to the right of this column. The Benchmark Examinations and the High School Qualifying Examination will assess students' competencies on the performance standards.

These are the English/Language Arts content standards that relate to reading.

B. A student should be a competent and thoughtful reader, listener, and viewer of literature, technical materials, and a variety of other information. A student who meets the content standard should:

1. comprehend meaning from written text and oral and visual information by applying a variety of reading, listening, and viewing strategies; these strategies include phonic, context, and vocabulary cues in reading, critical viewing, and active listening;
2. reflect on, analyze, and evaluate a variety of oral, written, and visual information and experiences, including discussions, lectures, art, movies, television, technical materials, and literature; and,
3. relate what the student views, reads, and hears to practical purposes in the student's own life, to the world outside, and to other texts and experiences.

D. A student should be able to think logically and reflectively in order to present and explain positions based on relevant and reliable information. A student who meets the content standard should:

1. develop a position by
 - a. reflecting on personal experience, prior knowledge, and new information;
 - b. formulating and refining questions;
 - c. identifying a variety of pertinent sources of information;
 - d. analyzing and synthesizing information;
 - e. determining an author's purposes; and
2. evaluate the validity, objectivity, reliability, and quality of information read, heard, and seen.

E. A student should understand and respect the perspectives of others in order to communicate effectively. A student who meets the content standard should:

1. use information, both oral and written, and literature of many types and cultures to understand self and others;
2. recognize content from the speaker's or author's perspective;
3. recognize bias in all forms of communication; and
4. recognize the communication styles of different cultures and the possible effects on others.

ALASKA READING PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
<p>R1.1a Distinguish, reproduce, and manipulate the sounds in words.</p> <p>R1.1b Use a combination of the following to read and comprehend text:</p> <ul style="list-style-type: none"> • knowledge of phonics, alphabet, and alphabetic principle, <i>e.g.</i> recognition of letter shapes, letter names, letter/sound relationships, initial/final consonants, vowels, letter patterns; • pictures and visual cues; • sight recognition of high frequency vocabulary words; • word structure, <i>e.g.</i> root words, prefixes, suffixes, rhyming words; • language structure, <i>e.g.</i>, word order, grammar; • meaning structure, <i>e.g.</i>, prior knowledge and context; • text structure <i>e.g.</i>, read left to right. 	<p>R2.1a Use a combination of the following to read and comprehend text:</p> <ul style="list-style-type: none"> • knowledge of phonetics, language structure, and semantics; • text structures such as illustrations, graphs, and headers; • self-monitoring and self-correcting strategies when reading; • adjusting reading pace or style based on purpose, task, and type of text. <p>R2.1b Use knowledge of word families, phonetics, context clues, visual cues, and structural elements to determine meaning of unfamiliar words.</p>	<p>R3.1 Apply knowledge of word origins, structure and context clues, and root words, and use dictionaries and glossaries, to determine the meaning of new words and to comprehend text.</p>	<p>R4.1 Apply knowledge of syntax, roots, and word origins, and use context clues and reference materials, to determine the meaning of new words and to comprehend text.</p>
<p>R1.2a Comprehend literal meaning from text.</p> <p>R1.2b Use a variety of strategies to support comprehension, including predicting, questioning, rereading, and monitoring own comprehension.</p>	<p>R2.2 Infer meaning from text.</p>	<p>R3.2 <i>This standard is assessed at an earlier level. It is related to R4.10 (understanding of theme).</i></p>	<p>R4.2 <i>This standard is assessed at an earlier level. It is related to R4.10 (understanding of theme).</i></p>
<p>R1.3 Read texts aloud with expression, demonstrating knowledge of punctuation and other conventions of print.</p>	<p>R2.3 Read texts aloud with rhythm, flow, expression, demonstrating knowledge of punctuation and other conventions of print.</p>	<p>R3.3 Rehearse and read texts aloud to an audience, in performances such as readers' theater, reading to younger students or peers, or as part of formal presentations including research reports and literature responses.</p>	<p>R4.3 <i>Students are expected to master skills related to this standard in earlier grades.</i></p>
<p>R1.4a Retell or dramatize a story after reading it.</p> <p>R1.4b Restate information after reading a text.</p>	<p>R2.4a Retell stories in correct sequence.</p> <p>R2.4b Restate and summarize information or ideas from a text.</p>	<p>R3.4 Restate and summarize information or ideas from a text and connect new information or ideas to prior knowledge and experience.</p>	<p>R4.4 Summarize information or ideas from a text and make connections between summarized information or sets of ideas and related topics or information.</p>
<p>R1.5 Identify the main idea of a passage.</p>	<p>R2.5 Locate evidence in the text and from related experiences to support understanding of a main idea.</p>	<p>R3.5 Clarify and connect main ideas and concepts, identify their relationship to other sources and related topics, and provide supporting details.</p>	<p>R4.5a Identify and assess the validity, accuracy, and adequacy of evidence that supports an author's main ideas.</p> <p>R4.5b Critique the power, logic, reasonableness, and audience appeal of arguments advanced in public documents.</p>

ALASKA READING PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
R1.6 Read and follow simple directions to complete a simple task.	R2.6 Read and follow multi-step directions to complete a simple task.	R3.6 Read and follow multi-step directions to complete a task, and identify the sequence prescribed.	R4.6 Read and follow multi-step directions to complete complex tasks.
R1.7 Distinguish between common forms of text (genres): <ul style="list-style-type: none"> • fiction and non-fiction, • prose and poetry, and • short story and drama 	R2.7 Explain the characteristics of the following: <ul style="list-style-type: none"> • fiction and non-fiction, • prose and poetry, and • four major genres of fiction: short story, drama, novel, and poetry. 	R3.7 Analyze basic rules (conventions) of the four genres of fiction (short story, drama, novel and poetry).	R4.7 Analyze the rules (conventions) of the four genres of fiction (short story, drama, novel, and poetry) and the techniques used in these genres, and evaluate the effects of these conventions and techniques on the audience.
R1.8 Identify and describe basic plot, main characters, and setting (time and place) in fiction.	R2.8a Define and identify plots, settings, and characters in fiction. R2.8b Compare and contrast plots, settings, and characters in a variety of works by a variety of authors.	R3.8 Analyze and evaluate narrative elements including plot, character, setting and point of view to determine their importance to the story.	R4.8 Analyze and evaluate how authors use narrative elements and tone in fiction for specific purposes.
R1.9 Express own opinions about texts.	R2.9a Differentiate between fact and opinion. R2.9b Express opinions about a text and support these opinions with textual evidence.	R3.9a Differentiate between fact and opinion in text. R3.9b Analyze an author's purpose and offer a critical opinion of the effectiveness of the text in meeting that purpose.	R4.9 Express and support assertions, with evidence from the text or experience, about the effectiveness of a text.
R1.10 Make connections between a text and personal experiences, experiences of others, or other texts, and locate details in the text to illustrate these connections.	R2.10 Identify themes in texts and connect them to personal experiences, experiences of others, and other texts.	R3.10 Connect themes to personal experiences, experiences of others, and other texts, and locate evidence from texts to support or illustrate these connections.	R4.10 Analyze and evaluate themes across a variety of texts, using textual and experiential evidence.
R1.11 Identify basic cultural influences in texts.	R2.11 Connect cultural events, ideas, settings, and influences from one text to similar texts from other cultures.	R3.11 Compare and contrast how texts reflect historical and cultural influences.	R4.11 Analyze the effects of cultural and historical influences on texts.

ALASKA CONTENT STANDARDS for English/Language Arts

The **CONTENT STANDARDS FOR ALASKA STUDENTS** were adopted by the Alaska State Board of Education in 1994 and 1995. The **ALASKA WRITING PERFORMANCE STANDARDS** support the sections of the English/Language Arts Content Standards listed to the right of this column. The Benchmark Examinations and the High School Qualifying Examination will assess students' competencies on the performance standards.

These are the English/Language Arts content standards that relate to writing.

A. A student should be able to speak and write well for a variety of purposes and audiences. A student who meets the content standard should:

1. apply elements of effective writing and speaking; these elements include ideas, organization, vocabulary, sentence structure, and personal style;
2. in writing demonstrate skills in sentence and paragraph structure, including grammar, spelling, capitalization, and punctuation;
4. write and speak well to inform, to describe, to entertain, to persuade, and to clarify thinking in a variety of formats, including technical communication;
5. revise, edit, and publish the student's own writing as appropriate; and
8. evaluate the student's own speaking and writing and that of others using high standards.

D. A student should be able to think logically and reflectively in order to present and explain positions based on relevant and reliable information. A student who meets the content standard should:

1. develop a position by
 - a. reflecting on personal experiences, prior knowledge, and new information;
 - b. formulating and refining questions;
 - c. identifying a variety of pertinent sources of information;
 - d. analyzing and synthesizing information; and
 - e. determining an author's purpose.
2. evaluate the validity, objectivity, reliability, and quality of information read, heard, and seen;
3. give credit and cite references as appropriate; and
4. explain and defend a position orally, in writing, and with visual aids as appropriate.

ALASKA WRITING PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
<p>W1.1a Write complete sentences with a subject and a predicate.</p> <p>W1.1b Write a paragraph with a topic sentence and supporting details.</p> <p>W1.1c Write short stories or compositions with a beginning, middle, and end.</p>	<p>W2.1 Write a well-organized two-paragraph composition that addresses a single topic.</p>	<p>W3.1 Write a coherent composition that includes a thesis statement, supporting evidence, and a conclusion.</p>	<p>W4.1 Write a coherent composition with a thesis statement that is supported with evidence, well-developed paragraphs, transitions, and a conclusion.</p>
<p>W1.2 Write for a specific audience, including self, other children, parents, and other adults.</p>	<p>W2.2 Use a variety of fiction and non-fiction forms when writing for different audiences.</p>	<p>W3.2 Select and use appropriate forms of fiction and non-fiction to achieve different purposes when writing for different audiences.</p>	<p>W4.2 Demonstrate understanding of elements of discourse (purpose, speaker, audience, form) when completing expressive (creative, narrative, descriptive), persuasive, research-based, informational, or analytic writing assignments.</p>
<p>W1.3a Use a variety of simple sentence structures, and basic rules of punctuation and capitalization in written work.</p> <p>W1.3b Proofread writing for legibility, spelling, capitalization, and punctuation when producing final drafts.</p>	<p>W2.3a Use a variety of simple and complex sentence structures in written work.</p> <p>W2.3b Proofread and correct grammar, sentence structure, paragraph structure, punctuation, capitalization, spelling, and usage in finished written work.</p>	<p>W3.3 Use the conventions of standard English including grammar, sentence structure, paragraph structure, punctuation, spelling, and usage in written work.</p>	<p>W4.3 Use the conventions of standard English independently and consistently including grammar, sentence structure, paragraph structure, punctuation, spelling, and usage.</p>
<p>W1.4a Revise writing for detail and clarity.</p> <p>W1.4b Provide appropriate feedback to peers about written work.</p>	<p>W2.4a Revise writing to improve the logical progression of ideas and supporting information.</p> <p>W2.4b Revise own and others' work and provide appropriate feedback to peers based upon established criteria, to improve quality and effectiveness of writing.</p>	<p>W3.4a Revise writing to improve organization, word choice, paragraph development, and voice appropriate to the purpose.</p> <p>W3.4b Form and explain own standards or judgments of quality writing.</p>	<p>W4.4 Revise writing to improve style, word choice, sentence variety, and subtlety of meaning in relation to the purpose and audience.</p>
<p>W1.5 List titles and authors of books and other materials when used as references in written work.</p>	<p>W2.5 Give credit for others' ideas, images, and information by citing information about sources, including title and author.</p>	<p>W3.5 List and document sources using a given format.</p>	<p>W4.5 Cite sources of information using a standard method of documentation.</p>
<p>W1.6 <i>This standard is addressed in the intermediate grades.</i></p>	<p>W2.6 Use resources such as computers, word processing software, dictionaries, and thesauruses to make choices when writing.</p>	<p>W3.6 Compose and edit a composition with a word processing program.</p>	<p>W4.6 <i>This standard is addressed in the intermediate grades, and students are expected to continue to use these skills throughout high school.</i></p>

ALASKA CONTENT STANDARDS for Mathematics

The **CONTENT STANDARDS FOR ALASKA STUDENTS** were adopted by the Alaska State Board of Education in 1994 and 1995. The **ALASKA MATHEMATICS PERFORMANCE STANDARDS** support the Mathematics Content Standards listed to the right of this column. The Benchmark Examinations and the High School Qualifying Examination will assess students' competencies on the performance standards.

A. A student should understand mathematical facts, concepts, principles, and theories. A student who meets the content standard should:

1. understand and use numeration, including
 - a. numbers, number systems, counting numbers, whole numbers, integers, fractions, decimals, and percents; and
 - b. irrationals and complex numbers;
2. select and use appropriate systems, units, and tools of measurement, including estimation;
3. perform basic arithmetic functions, make reasoned estimates, and select and use appropriate methods or tools for computation or estimation including mental arithmetic, paper and pencil, a calculator, and a computer;
4. represent, analyze, and use mathematical patterns, relations, and functions using methods such as tables, equations, and graphs;
5. construct, draw, measure, transform, compare, visualize, classify, and analyze the relationships among geometric figures; and
6. collect, organize, analyze, interpret, represent, and formulate questions about data and make reasonable and useful predictions about the certainty, uncertainty, or impossibility of an event.

B. A student should understand and be able to select and use a variety of problem-solving strategies. A student who meets the content standard should:

1. use computational methods and appropriate technology as problem-solving tools;
2. use problem solving to investigate and understand mathematical content;
3. formulate mathematical problems that arise from everyday situations;
4. develop and apply strategies to solve a variety of problems;
5. check the results against mathematical rules;
6. use common sense to help interpret results;
7. apply what was learned to new situations; and
8. use mathematics with confidence.

C. A student should understand and be able to form and use appropriate methods to define and explain mathematical relationships. A student who meets the content standard should:

1. express and represent mathematical ideas using oral and written presentations, physical materials, pictures, graphs, charts, and algebraic expressions;
2. relate mathematical terms to everyday language;
3. develop, test, and defend mathematical hypotheses; and
4. clarify mathematical ideas through discussion with others.

D. A student should be able to use logic and reason to solve mathematical problems. A student who meets the content standard should:

1. analyze situations;
2. draw logical conclusions;

3. use models, known facts, and relationships to explain the student's reasoning;
4. use deductive reasoning to verify conclusions, judge the validity of arguments, and construct valid arguments; and
5. use inductive reasoning to recognize patterns and form mathematical propositions.

E. A student should be able to apply mathematical concepts and processes to situations within and outside of school. A student who meets the content standard should:

1. explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations;
2. use mathematics in daily life; and
3. use mathematics in other curriculum areas.

ALASKA MATHEMATICS PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
A1. Numeration			
A1.1.1 Read, write, order, count, and model one-to-one correspondence with whole numbers to 100.	A1.2.1 Read, write, model, order, and count with positive whole numbers to 1,000,000 and negative whole numbers.	A1.3.1 Read, write, model, and order real numbers, explaining scientific notation, exponents, and percents.	A1.4.1 Read, write, model, order, and define real numbers and subsets.
A1.1.2 Use, model, and identify place value positions of 1's, 10's, and 100's.	A1.2.2 Use, model and identify place value positions from 0.001 to 1,000,000.	A1.3.2 Model counting in a different base system.	A1.4.2 Add in a different base system.
A1.1.3 Model and explain the processes of addition and subtraction, describing the relationship between the operations.	A1.2.3 Model and explain the processes of multiplication and division. Describe the relationships among the four basic operations.		A1.4.3 Compare and contrast the relationship between various applications of the same operation.
A1.1.4 Select and use various representations of ordinal and cardinal numbers.	A1.2.4 Identify and describe different uses for the same numerical representation.	A1.3.4 Translate between equivalent representations of the same number. Select a representation that is appropriate for the situation.	A1.4.4 Translate between equivalent representations of the same exponential expression.
A1.1.5 Identify, model, and label simple fractions, describing and defining them as equal parts of a whole, a region, or a set.	A1.2.5 Model and explain the process of adding and subtracting fractions with common denominators and decimals that represent money.	A1.3.5 Describe and model the relationship of fractions to decimals, percents, ratios, and proportions.	
A1.1.6 Identify, describe, and extend patterns inherent in the number system. Skip count by 2's, 5's and 10's. Add and subtract by 10. Identify even and odd numbers.	A1.2.6 Identify and describe factors and multiples including those factors and multiples common to a pair or set of numbers.	A1.3.6 Use, explain, and define the rules of divisibility, prime and composite numbers, multiples, and order of operations.	
A1.1.7 Demonstrate the commutative and identity properties of addition.	A1.2.7 Demonstrate the commutative and identity properties of multiplication.	A1.3.7 Use commutative, identity, associative, and distributive properties with variables.	A1.4.7 Recognize, describe, and use properties of the real number system.

ALASKA MATHEMATICS PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
A2. Measurement			
A2.1.1 Compare and order objects by various measurable attributes including calendar, temperature, length, weight, capacity, area, and volume.	A2.2.1 Estimate and measure weights, lengths, and temperatures to the nearest unit using the metric and standard systems.	A2.3.1 Estimate and measure various dimensions to a specified degree of accuracy.	A2.4.1 Evaluate measurements for accuracy, precision, and error with respect to the measuring tools, methods, and the computational process.
A2.1.2 Compare objects to standard and non-standard units to identify objects that are greater than, less than, and equal to a given unit.	A2.2.2 Identify and use equivalent measurements (<i>e.g.</i> , 60 minutes = 1 hour, 7 days = 1 week).	A2.3.2 Estimate and convert measurements within the same system.	A2.4.2 Estimate and convert measurements between different systems.
	A2.2.3 Use a variety of measuring tools; describe the attribute(s) they measure.	A2.3.3 Use a variety of methods and tools to construct and compare plane figures.	A2.4.3 Apply various measurement systems to describe situations and solve problems.
A2.1.4 Choose a unit of measure, estimate the length or weight of objects and then measure to check for reasonableness.	A2.2.4 Estimate and measure the dimensions of geometric figures.	A2.3.4 Describe and apply the relationships between dimensions of geometric figures to solve problems using indirect measurement; describe and apply the concepts of rate and scale.	A2.4.4 Use indirect methods, including the Pythagorean Theorem and right triangle trigonometry, to find missing dimensions.
A2.1.5 Tell time to the nearest half hour, distinguishing between morning, afternoon, and evening.	A2.2.5 Tell time using analog and digital clocks identifying AM and PM; find elapsed time.	A2.3.5 Apply information about time zones and elapsed time to solve problems.	
A2.1.6 Identify coins, their value, and the value of given sets of coins.	A2.2.6 Read, write, and use money notation, determining possible combinations of coins and bills to equal given amounts; count back change for any given situation.		

ALASKA MATHEMATICS PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
A3. Estimation and Computation			
A3.1.1 Make reasonable estimates of “how many” and “how much”; estimate the results of simple addition and subtraction problems.	A3.2.1 Describe and use a variety of estimation strategies including rounding to the appropriate place value, multiplying by powers of 10 and using front-end estimation to check the reasonableness of solutions.	A3.3.1 Apply, explain, and assess the appropriateness of a variety of estimation strategies including truncating and rounding to compatible numbers.	A3.4.1 Use estimation to solve problems and to check the accuracy of solutions; state whether the estimation is greater or less than the exact answer.
A3.1.2 Recall and use basic addition and subtraction facts orally and with paper and pencil without a calculator.	A3.2.2 Recall and use basic multiplication and division facts orally, with paper and pencil without a calculator.	A3.3.2 Apply basic operations efficiently and accurately, using estimation to check the reasonableness of results.	
A3.1.3 Add and subtract whole numbers to 100 using a variety of models and algorithms.	A3.2.3 Add and subtract whole numbers and fractions with common denominators to 12 and decimals, including money amounts, using models and algorithms.	A3.3.3 Add and subtract fractions, decimals, and percents.	A3.4.3 Add and subtract real numbers using scientific notation, powers, and roots.
A3.1.4 Model multiplication as repeated addition and grouping objects; model division as “sharing equally” and grouping objects.	A3.2.4 Multiply and divide multi-digit whole numbers by 2-digit numbers, limiting the 2-digit divisors to those that end in 0; multiply and divide decimals that represent money by whole numbers.	A3.3.4 Multiply and divide rational numbers in various forms including fractions, decimals, and percents.	A3.4.4 Multiply and divide real numbers in various forms including scientific notation, powers, and roots.
	A3.2.5 Find equivalent fractions. Convert between fractions and mixed numbers.	A3.3.5 Convert between equivalent fractions, decimals, percents, and proportions. Convert from exact to decimal representations of irrational numbers.	A3.4.5 Select, convert, and apply an equivalent representation of a number for a specified situation.
	A3.2.6 Develop and interpret scales and scale models.	A3.3.6 Solve problems using ratios and proportions.	A3.4.6 Use ratios and proportions to model and solve fraction and percent problems with variables.

ALASKA MATHEMATICS PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
A4. Functions and Relationships			
A4.1.1 Recognize, describe, create, and extend repeating and increasing patterns with a variety of materials including symbols, objects, and manipulatives.	A4.2.1 Use patterns and their extensions to make predictions and solve problems; describe patterns found in the number system including those formed by multiples, factors, perfect squares, and powers of 10.	A4.3.1 Identify numeric and geometric patterns to find the next term and predict the <i>n</i> th term.	A4.4.1 Identify, graph, and describe the graphs of basic families of functions including linear, absolute value, quadratic, and exponential using a graphing calculator.
A4.1.2 Generate and solve simple functions by identifying and applying addition and subtraction patterns.	A4.2.2 Generate and solve simple functions by identifying and applying multiplication and division patterns.	A4.3.2 Identify and describe how a change in one variable in a function affects the remaining variables (<i>e.g.</i> , how changing the length affects the area and volume of a rectangular prism).	A4.4.2 Create and solve linear and quadratic equations and inequalities.
A4.1.3 Use a calculator to find and extend patterns in the number system.	A4.2.3 Use a calculator to find a missing item in a number sequence.	A4.3.3 Use a calculator to find a missing item in an arithmetic and a geometric sequence; predict the graph of each function.	A4.4.3 Create and solve simple systems of equations, algebraically and graphically, using a graphing calculator.
	A4.2.4 Use words, lists, and tables to represent and analyze patterns.	A4.3.4 Translate among and use tables of ordered pairs, graphs on coordinate planes, and linear equations as tools to represent and analyze patterns.	A4.4.4 Use discrete structures such as networks, matrices, sequences, and iterations as tools to analyze patterns, expressions, and equations.
A4.1.5 Complete open space sentences with missing numbers; use appropriate vocabulary including <i>greater than</i> , <i>less than</i> , and <i>equal to</i> ; and use the correct symbols.	A4.2.5 Explain the purpose of variables and use them in open sentences to express relationships and describe simple functions.	A4.3.5 Find the value of a variable by evaluating formulas and algebraic expressions for given values.	A4.4.5 Add, subtract, multiply, divide, and simplify rational expressions; add, subtract, and multiply polynomials.

ALASKA MATHEMATICS PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
A5. Geometry			
A5.1.1 Identify, sort, describe, model, and compare circles, triangles, and rectangles including squares regardless of orientation.	A5.2.1 Identify and compare various triangles and quadrilaterals according to their sides and/or angles.	A5.3.1 Identify, classify, compare, and sketch regular and irregular polygons.	A5.4.1 Identify and use the properties of polygons, including interior and exterior angles, and circles (including angles, arcs, chord, secants, and tangents) to solve problems.
A5.1.2 Identify, sort, describe, model, and compare solid figures including cubes, cylinders, and spheres.	A5.2.2 Compare and contrast plane and solid figures (e.g., circle/sphere, square/cube, triangle/pyramid) using relevant attributes, including the number of vertices, edges, and the number and shape of faces.	A5.3.2 Model, identify, draw and describe 3-dimensional figures including tetrahedrons, dodecahedrons, triangular prisms, and rectangular prisms.	A5.4.2 Create 2-dimensional representations of 3-dimensional objects.
A5.1.3 Identify and create examples of line symmetry; compare and describe given circles, triangles, and rectangles as larger, smaller, or congruent.	A5.2.3 Identify and model geometric figures that are congruent, similar, and/or symmetrical.	A5.3.3 Apply the properties of equality and proportionality to solve problems involving congruent or similar shapes.	A5.4.3 Identify congruent and similar figures using Euclidean and coordinate geometries; apply this information to solve problems.
A5.1.4 Demonstrate conservation of area using drawings or manipulatives.	A5.2.4 Distinguish between area and perimeter; find both using a variety of methods including rulers, grid paper and tiles.	A5.3.4 Estimate and determine volume and surface areas of solid figures using manipulatives and formulas; estimate and find circumferences and areas of circles.	
A5.1.5 Describe and identify geometric transformations including slides, flips, and turns.	A5.2.5 Identify and model transformations of geometric figures, describing the motions as slides, flips, or rotations.	A5.3.5 Draw and describe the results of transformations including translations (slides), rotations (turns), reflections (flips), and dilations (shrinking or enlarging).	A5.4.5 Use transformations to demonstrate geometric properties.
A5.1.6 Use comparative directional and positional words: <i>above, below, inside, outside, on, in, right and left, horizontal, vertical, and middle.</i>	A5.2.6 Locate and describe objects in terms of their position with and without compass directions; identify coordinates for a given point or locate points of given coordinates on a grid.	A5.3.6 Use coordinate geometry to represent and interpret relationships defined by equations and formulas including distance and midpoint.	A5.4.6 Use coordinate geometry to graph linear equations, determine slopes of lines, identify parallel and perpendicular lines, and find possible solutions to sets of equations.
A5.1.7 Draw and build familiar shapes.	A5.2.7 Sketch and identify line segments, midpoints, intersections, parallel and perpendicular lines.	A5.3.7 Draw, measure, and construct geometric figures including perpendicular bisectors, polygons with given dimensions and angles, circles with given dimensions, perpendicular and parallel lines.	A5.4.7 Construct geometric models, transformations, and scale drawings using a variety of methods including paper folding, compass, straight edge, protractor, and technology.

ALASKA MATHEMATICS PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
A.6 Statistics and Probability			
A6.1.1 Collect, record, organize, display, and explain the classification of data.	A6.2.1 Collect, organize, and display data creating a variety of visual displays including tables, charts, and line graphs.	A6.3.1 Collect, analyze and display data in a variety of visual displays including frequency distributions, circle graphs, box and whisker plots, stem and leaf plots, histograms, and scatter plots with and without technology.	A6.4.1 Analyze and draw inferences from a wide variety of data sources that summarize data; construct graphical displays with and without technology.
A6.1.2 Describe data from a variety of visual displays including tallies, tables, pictographs, bar graphs, and Venn diagrams.	A6.2.2 Present the data using a variety of appropriate representations and explain the meaning of the data.	A6.3.2 Interpret and analyze information found in newspapers, magazines, and graphical displays.	A6.4.2 Determine the line of best fit and use it to predict unknown data values.
A6.1.3 Use the terms <i>maximum</i> and <i>minimum</i> when working with a data set.	A6.2.3 Describe and interpret a data set using mean, median, mode, and range.	A6.3.3 Determine and justify a choice of mean, median, or mode as the best representation of data for a practical situation.	A6.4.3 Describe data, selecting measures of central tendencies and distribution, to convey information in the data.
		A6.3.4 Make projections based on available data and evaluate whether or not inferences can be made given the parameters of the data.	A6.4.4 Analyze the validity of statistical conclusions and the use, misuse, and abuse of data caused by a wide variety of factors including choices of scale, inappropriate choices of measures of center, incorrect curve fitting, and inappropriate uses of controls or sample groups.
A6.1.5 Find and record the possibilities of simple probability experiments; explain differences between chance and certainty, giving examples.	A6.2.5 Estimate whether a game is mathematically fair or unfair; analyze and present probability data using simple fractions.	A6.3.5 Use tree diagrams and sample spaces to make predictions about independent events.	A6.4.5 Analyze data from multiple events and predict theoretical probability; find and compare experimental and theoretical probability for a simple situation, discussing possible differences between two results.
A6.1.6 Conduct a survey and tally the results.	A6.2.6 Conduct simple probability experiments using concrete materials and represent the results using fractions and probability.	A6.3.6 Design and conduct a simulation to study a problem and communicate the results.	A6.4.6 Design, conduct, analyze, and communicate the results of multi-stage probability experiments.

ALASKA MATHEMATICS PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:

B. Problem-Solving

B1.1.1 Formulate problems from practical and mathematical activities.	B1.2.1 Read and summarize a problem, using mathematical terms and symbols.	B1.3.1 Analyze and summarize a problem using the relationships between the known facts and unknown information.	B1.4.1 Recognize and formulate mathematical problems from within and outside the field of mathematics.
B1.1.2 Develop and apply strategies including guess and check, modeling and acting out, drawings, and extending patterns to solve a variety of problems.	B1.2.2 Select and apply a variety of strategies including making a table, chart or list; drawing pictures; making a model; and comparing with previous experience to solve problems.	B1.3.2 Select, modify, and apply a variety of problem-solving strategies including graphing, inductive and deductive reasoning, Venn diagrams, and spreadsheets.	B1.4.2 Apply multi-step, integrated, mathematical problem-solving strategies, persisting until a solution is found or it is clear no solution exists.
B1.1.3 Predict an answer before solving a problem and compare results to check for reasonableness.	B1.2.3 Explain and verify results of the original problem and apply what was learned to new situations.	B1.3.3 Evaluate, interpret, and justify solutions to problems.	B1.4.3 Verify the answer by using an alternative strategy.

ALASKA MATHEMATICS PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:

C. Communication

C1.1.1 Translate problems from everyday language into math language and symbols.	C1.2.1 Use the mathematical vocabulary appropriate to the problem.	C1.3.4 Use math vocabulary, symbols, and notation to represent information in the problem.	C1.4.1 Use appropriate technology to represent the information and ideas in a problem.
C1.1.2 Use manipulatives, models, pictures, and language to represent and communicate mathematical ideas.	C1.2.2 Represent mathematical and practical situations using concrete, pictorial, and symbolic representation.	C1.3.2 Represent a problem numerically, graphically, symbolically; translate among these alternative representations.	C1.4.2 Use numerical, graphic, and symbolic representations to support oral and written communication about math ideas.
C1.1.3 Use everyday language to explain thinking about problem-solving strategies and solutions to problems.	C1.2.3 Organize and communicate mathematical problem-solving strategies and solutions to problems.	C1.3.3 Use appropriate vocabulary, symbols and technology to explain, justify, and defend mathematical solutions.	C1.4.3 Explain, justify and defend mathematical ideas, solutions, and methods to various audiences.

ALASKA MATHEMATICS PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
D. Reasoning			
D1.1.1 Draw conclusions about mathematical problems.	D1.2.1 Draw logical conclusions about mathematical situations.	D1.3.1 Use informal deductive and inductive reasoning in both concrete and abstract contexts.	D1.4.1 Follow and evaluate an argument, judging its validity using inductive or deductive reasoning and logic.
D1.1.2 Find examples that support or refute mathematical statements.	D1.2.2 Given a rule or generalization, determine whether the example fits.	D1.3.2 State counterexamples to disprove statements.	D1.4.2 Make and test conjectures.
D1.1.3 Explain why a prediction, estimation, or solution is reasonable.	D1.2.3 Justify answers and mathematical strategies as reasonable.	D1.3.3 Justify and defend the validity of mathematical strategies and solutions using examples and counterexamples.	D1.4.3 Use methods of proofs including direct, indirect, and counterexamples, to validate conjectures.

ALASKA MATHEMATICS PERFORMANCE STANDARDS

<i>To be assessed in Grade 3</i>	<i>To be assessed in Grade 6</i>	<i>To be assessed in Grade 8</i>	<i>To be assessed on High School Graduation Qualifying Exam</i>
Between ages 5-7, students:	Between ages 8-10, students know and are able to do everything required at earlier ages and:	Between ages 11-14, students know and are able to do everything required at earlier ages and:	Between ages 15-18, students know and are able to do everything required at earlier ages and:
E. Connections			
E1.1.1 Apply mathematical skills and processes to literature.	E1.2.1 Apply mathematical processes to social studies.	E1.3.1 Apply mathematical skills and processes to science and humanities.	E1.4.1 Apply mathematical skills and processes to global issues.
E1.1.2 Apply mathematical skills and processes to situations with self and family.	E1.2.2 Apply mathematical skills and processes to situations with friends and school.	E1.3.2 Apply mathematical skills and processes to situations with peers and community.	E1.4.2 Describe how mathematics can be used in knowing how to prepare for careers.



APPENDIX 2

Practice Tests, Scoring Guides, and Test Item Maps for the Grade 3 Benchmark Exams

READING ASSESSMENT

THE PRACTICE TESTS

The Benchmark **PRACTICE TESTS** were developed to give students and teachers a practical way to become familiar with the kinds of test items that will appear on the Alaska Benchmark Examinations. The practice tests are in no way a predictor of the test taker's grade on the actual Benchmark tests, nor are the practice test questions the same questions that will be on the actual Benchmark tests. The type size of the actual practice tests has been reduced for purposes of this Teacher's Guide.

The **SCORING GUIDES** for the Benchmark Practice Tests provide both correct answers and the guidelines used to score "constructive-response" questions on the practice tests.

The **TEST ITEM MAPS** show the number of questions of each type that measure particular performance standards on each practice test.

PRACTICE TEST—Reading, Grade 3

©2001 by Alaska Department of Education & Early Development and CTB/McGraw Hill

SAMPLE QUESTIONS

Directions: Read the sentences below. Then do Sample A and Sample B.

Kim was very sleepy on Monday morning.
It was hard for her to get up for school.

Sample A

Find the picture that shows what Kim probably did on Sunday night.



ate a good dinner

(A)



stayed up late

(B)



went to bed early

(C)

Sample B

Why does Kim need to wake up on Monday morning?

PRACTICE QUESTIONS

Directions: Here is a story about two friends. Read the story. Then do Numbers 1 through 6. You may look back at the story.

CLOSE FRIENDS

by Sally Lucas

Squirrel and Bird were close friends. They went everywhere together. One day they saw a snowman standing alone in front of a house.

“Look at the sad snowman,” said Squirrel. “Do you think we could cheer him up?”

“Of course,” said Bird. “I’ll sing to him. Music may make him feel better.”

“I’ll give him a present,” said Squirrel. “That may cheer him up.”

Squirrel dug up some nuts he had been saving and laid them in a pile in front of the snowman. Bird sang her favorite songs.

Still, the snowman didn’t smile.

“We can’t cheer him up,” whispered Squirrel. “Maybe someone else can make him happy. Can you call the children in the house out to play? Maybe they will know what to do.”

Bird flew to the window and chirped as loudly as he could.

“Listen,” cried the boy inside. “A bird is singing to tell us that it’s a nice day. Let’s go out and play.”

Tom and his sister, Amelia, put on their jackets, boots, and mittens. They ran out to play in the snow.

They saw the nuts lying on the ground. “We can use these to give our snowman a bigger mouth,” cried Tom. “He needs a smile on his face.”

“And there will still be nuts left over,” said Amelia. “Let’s make another snowman. He can have a big grin, too.”

Squirrel and Bird watched the children from a nearby tree.

“Look,” said Squirrel to Bird. “You were right. The children knew what to do. The snowman is smiling.”

“And they are making another snowman,” chirped Bird.

“That’s good,” sighed Squirrel. “Everyone needs a close friend.”

1. What is this story mostly about?

- Ⓐ playing in the snow
- Ⓑ cheering up a sad snowman
- Ⓒ learning how to make a snowman

2. We know that Squirrel and Bird are close friends because

- Ⓐ they go everywhere together
- Ⓑ squirrels and birds are usually friends
- Ⓒ they are trying to cheer up a sad snowman



3. Why did Squirrel and Bird think that the snowman was sad?
- Ⓐ because he told them
 - Ⓑ because he was not smiling
 - Ⓒ because he was hungry for nuts
4. The children make a second snowman because
- Ⓐ they like playing in the snow
 - Ⓑ they don't want the first snowman to be lonely
 - Ⓒ they are trying to show off for Squirrel and Bird
5. Which of these is the root word, or base word, of standing?
- Ⓐ ing
 - Ⓑ stan
 - Ⓒ stand
6. On the lines below, write two ways the children cheer up the sad snowman.

Directions: Sometimes the way something looks tricks us. Read the story. Then do Numbers 7 through 11. You may look back at the story.



The Young Mouse

Once a young mouse went out to see the world. When he came home, he told his mother about the things he had seen.

"I met an animal who was very loud. He had something red on his head. He seemed to be very tall. His body was red, yellow, and brown. He had a hard, sharp nose. I didn't feel safe with him."

"Oh?" said the mouse's mother. "What else did you see?"

"I kept walking and I met a beautiful animal. His fur was the color of gold. He had ears like ours, and a long fluffy tail. He smiled at me and seemed very nice."

"Then what happened?" asked the mouse's mother.

"That big, noisy animal came. He screeched, and he waved his colorful arms. I was so scared that I ran all the way home."

The mouse's mother said, "Remember what happened today. You liked the furry animal because he was beautiful. But he is a cat and is NOT a friend of ours. You did not like the animal who was noisy and had a sharp nose. He is a rooster and he kept you from harm by scaring you away from the cat."

7. This passage is an example of

- ☐ A a poem
- ☐ B fiction
- ☐ C a play
- ☐ D nonfiction

8. The next time the young mouse sees a cat he will probably

- ☐ A find his mother
- ☐ B notice his beauty
- ☐ C ask him a question
- ☐ D run away from him

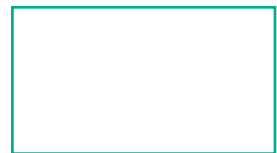
9. The young mouse didn't feel safe with the rooster because the rooster

- ☐ A was very loud
- ☐ B had small ears
- ☐ C was not like him
- ☐ D had a long fluffy tail

10. What lesson does the young mouse learn from his mother?

- ☐ A All roosters are ugly.
- ☐ B Be careful who you talk to.
- ☐ C Beautiful animals can't be trusted.
- ☐ D Don't always judge someone by the way they look.

11. These pictures tell the story of the mouse's journey. In the first picture, the mouse meets the rooster. In the second picture, the mouse meets the cat. In the empty box, draw what happens to the mouse right after he meets the cat. Then on the lines next to your picture tell about what you drew.



Directions: Read “Arbor Day”. Then do Numbers 12 through 18. You may look back at the passage.

ARBOR DAY

By Diane L. Burns



Trees are important in our world. Earth's oldest, biggest, and tallest living things are trees.

When settlers came to America during the 1600's, they were surprised to find so many trees. There were trees as far as a person could see. There were trees so huge that a large man could not put his arms around one. Those trees helped the pioneer families survive. Wood fires and log homes kept them warm and safe. From the wood of the trees, pioneers made furniture, barrels, and tools. Wood, bark, leaves, sap, and fruit gave them paper, ink, medicines, food, and even padding from their beds.

Most people thought the forests would last forever. By 1800, though, America had its first wood shortage. How did it happen? People had not known that trees were being cut down faster than new ones could grow. As more and more people came to America, they used more and more wood for things they needed. Farmers cut down whole forests to make room to plant crops. Lumberjacks cut the best trees and left the others. When the lumberjacks moved on, some kinds of trees did not grow back.

During the early 1800's, only a few people thought about replacing the cut-down trees. John Chapman did. He traveled westward, from Pennsylvania to Illinois, planting apple orchards. He gave away apple trees and seedlings—small, young trees—to settlers. The settlers nicknamed him Johnny Appleseed.

Johnny met Chief Cornplanter, a Seneca Indian who also worked with trees. Chief Cornplanter taught Johnny how to make an apple tree grow two kinds of apple fruit. This method is called grafting, and many people use it today. Johnny and the Chief also traded seeds. The trees that grew from their seeds helped people for many years.

Some American men made trips to foreign countries. There they saw ruined forests and learned how forestland could be protected. They came back to the United States and told people what they had learned. They warned that if Americans didn't use trees more carefully, someday the forests would all be gone. People were not ready to listen. Years went by, and America's forests kept disappearing.

Finally, J. Sterling Morton, the man who is remembered as the father of Arbor Day, got people to listen. He knew that trees would help the land in many ways. He named a Tree-Planting Day, or Arbor Day. He worked hard to make Arbor Day a national holiday. Today, many millions of trees have been planted in the United States because of Arbor Day, which is celebrated on J. Sterling Morton's birthday. Arbor Day was such a good idea that many other countries now also have an Arbor Day. Many, many trees are being planted all over the world because of J. Sterling Morton's work.

12. Which of these is something settlers made from trees?

- Ⓐ shoes
- Ⓑ clothing
- Ⓒ furniture
- Ⓓ covered wagons

13. America began to run out of wood because
- Ⓐ no one was planting trees
 - Ⓑ America was a large country
 - Ⓒ trees were not growing everywhere they were planted
 - Ⓓ trees were being cut down faster than new ones could grow
14. Johnny Appleseed got his nickname because
- Ⓐ he made friends with the Seneca chief who traded with him
 - Ⓑ he gave away seeds and seedlings to settlers
 - Ⓒ his apple trees grew large and strong
 - Ⓓ his favorite fruit was the apple
15. What is this passage mostly about?
- Ⓐ the Seneca Indians and their chief
 - Ⓑ the many ways settlers used trees
 - Ⓒ how to grow apple trees from seeds
 - Ⓓ people who cared about planting trees
16. Why did John Chapman plant trees?
- Ⓐ Chief Cornplanter told him to.
 - Ⓑ J. Sterling Morton was his friend.
 - Ⓒ He wanted to replace the ones being cut down.
 - Ⓓ He wanted to be remembered for the good things he did.
17. Why is Arbor Day important?
- Ⓐ It is a holiday on which most people do not work.
 - Ⓑ Trees are planted on this day.
 - Ⓒ It is the Seneca Indian chief's birthday.
 - Ⓓ People celebrate this day only in certain, special places.
18. The last two paragraphs of the story end with some bad news and some good news. What is the bad news about trees? Write your answer on the lines below.

What is the good news? Write your answer on the lines below.

SCORING GUIDE—Reading, Grade 3

MULTIPLE-CHOICE QUESTIONS

Sample A B

1. B
2. A
3. B
4. B
5. C
7. B
8. D
9. A
10. D
12. C
13. D
14. B
15. D
16. C
17. B

CONSTRUCTED-RESPONSE QUESTIONS

Sample B

Why does Kim need to wake up on Monday morning?

Exemplary Response:

Kim needs to wake up because she has to go to school.

Score Points: 1 point possible

- 1 point for the correct answer

Item 6

On the lines below, write two ways the children cheer up the sad snowman.

Exemplary Response:

- They used the nuts to give the snowman a smile.
- They made another snowman.

Score Points: 2 points possible

- 1 point for each correct answer

Item 11

These pictures tell the story of the mouse's journey. In the first picture, the mouse meets the rooster. In the second picture, the mouse meets the cat. In the empty box, draw what happens to the mouse right after he meets the cat. Then on the lines next to your picture tell about what you drew.

Exemplary Response:

Score Points: 2 points possible

- 2 points Drawing of the rooster chasing the mouse and annotation with the words, “The rooster is chasing the mouse,” or “The mouse is running home.”
- 1 point Drawing or annotation only
- 0 points Irrelevant drawing or annotation

NOTE: Students must include the rooster either in the drawing or in the annotation, but need not include it in both places to receive a point for their answer.

Item 18

The last two paragraphs of the story end with some bad news and some good news. What is the bad news about trees? Write your answer on the lines below.
What is the good news? Write your answer on the lines below.

Exemplary Response:

A version of one of the following:

- The bad news is that no one was listening, and the forests were disappearing.
- The good news is that J. Sterling Morton, the father of Arbor Day, got people to listen to him.
- The good news is that lots of trees were planted.
- The good news is that many countries now have Arbor Day.
- The good news is that forests weren’t disappearing anymore.

Score Points: 2 points possible

- 1 point for each correct answer

NOTE: The student need not cite Morton’s name to receive full credit for a correct response.

TEST ITEM MAP—Reading, Grade 3

Number of Test Questions by Performance Standard

PERFORMANCE STANDARDS	NUMBER OF TEST QUESTIONS			PERCENT OF EMPHASIS	TOTAL RAW SCORE POINTS
	MULTIPLE-CHOICE	SHORT RESPONSE	EXTENDED RESPONSE		
Reading Totals	30	5	1	100%	42
R1.1 Use phonics; recognize common words	4			10%	4
R1.2 Comprehend literal meaning; use strategies	5	1		14%	6
R1.4 Retell or restate information	3	1		12%	5
R1.5 Identify main idea	4	1		14%	6
R1.6 Read and follow simple directions	3	1		12%	5
R1.7 Identify forms of texts	4			10%	4
R1.8 Identify basic story elements	2	1	1	17%	7
R1.10 Make connections	5			12%	5

WRITING ASSESSMENT

THE PRACTICE TESTS

The Benchmark **PRACTICE TESTS** were developed to give students and teachers a practical way to become familiar with the kinds of test items that will appear on the Alaska Benchmark Examinations. The practice tests are in no way a predictor of the test taker's grade on the actual Benchmark tests, nor are the practice test questions the same questions that will be on the actual Benchmark tests. The type size of the actual practice tests has been reduced for purposes of this Teacher's Guide.

The **SCORING GUIDES** for the Benchmark Practice Tests provide both correct answers and the guidelines used to score "constructive-response" questions on the practice tests.

The **TEST ITEM MAPS** show the number of questions of each type that measure particular performance standards on each practice test.

PRACTICE TEST—Writing, Grade 3

©2001 by Alaska Department of Education & Early Development and CTB/McGraw Hill

SAMPLE QUESTIONS

Sample A

Choose the words that will make this a complete sentence.

My sister _____.

- (A) and I
- (B) eight years old
- (C) is in third grade
- (D) writing a letter

Sample B

There are four mistakes in this paragraph. Let's correct them together.

In the summer, the days are more longer, so there is time to do things I enjoy. I can ride my bike. And go swimming. I can also plays in the park with my friends.

Directions

A student wrote a paragraph about a school game. There are some mistakes that need correcting.

¹ After school, we checked out the big game. ² Playing the team from across town. ³ The game lasted for over three hours, but it was exciting the whole time. ⁴ We won in the final minute!

Sample C

Choose the best way to write Sentence 2.

- (A) Our team playing the team from across town.
- (B) Having to play the team from across town.
- (C) Our team was playing the team from across town.
- (D) Best as it is: Playing the team from across town.

PRACTICE QUESTIONS

1. Here is a paragraph about bicycling. There are six mistakes in capitalization, punctuation, and spelling. Draw a line through each mistake and write the correction in the space above it.

Everyone loves riding a bicycle, maybe it is the excitement of seeing new Places. What could be more fun than the sense of adventure as we pedal along our favorite paths. With the wind at our Backs, we feel alot like birds flying high up in the sky.



2. Pretend that a talking dog moved into your house. On the lines below and on the next pages, write a story describing what happened. Make sure your story has a beginning, a middle, and an end. You do not have to use all the lines.



For this answer, make sure you use complete sentences and check your work for correct spelling, capitalization, and punctuation.



Use the **Writing Skills Checklist** below

- to help you plan your writing
- to check your writing when you are done

Writing Skills Checklist

1. Does your story have a beginning, a middle, and an end?
2. Have you used words that make your story interesting to read?
3. Have you spelled words correctly?
4. Have you used correct capitalization and punctuation?
5. Have you written complete sentences?
6. Have you written your story carefully so that anyone can read your writing?

_____ [More lines follow] _____

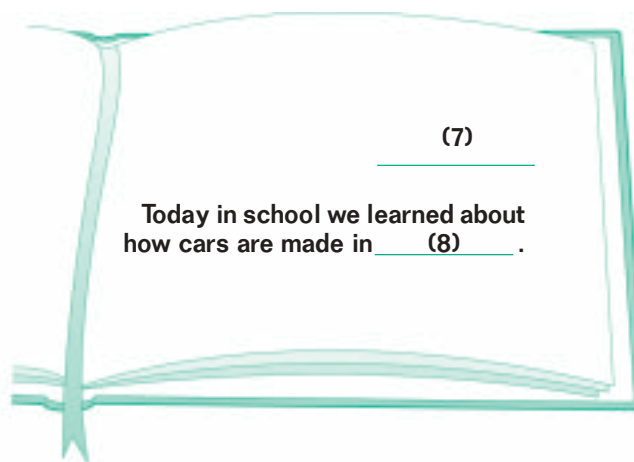
Directions

For Numbers 3 through 5, choose the sentence that is written correctly.

3. Ⓐ This time my dog.
Ⓑ Going for a run.
Ⓒ They will have fun.
 4. Ⓐ Writing a report.
Ⓑ The report about cars.
Ⓒ After I wrote it.
Ⓓ My teacher liked it.
 5. Ⓐ We went to sleep early.
Ⓑ We studying hard at school.
Ⓒ We tired at the end of the day.
Ⓓ We eaten a good dinner.
6. Choose the sentence that has the correct capitalization and punctuation.
- Ⓐ Did you see the movie.
 - Ⓑ the movie was exciting.
 - Ⓒ It had a happy ending.

Directions

Here is a page from Tom's journal. For Numbers 7 and 8, choose the answer that uses the correct capitalization and punctuation for each missing part.



7. Ⓐ Monday, april 17
Ⓑ Monday April 17
Ⓒ monday april 17
Ⓓ Monday, April 17

8. Ⓐ Detroit Michigan
 Ⓑ Detroit, michigan
 Ⓒ Detroit, Michigan
 Ⓓ Detroit michigan
9. Here is another thing Tom wrote in his journal. Choose the words that will complete the sentence.

Our classroom_____.

- Ⓐ lots of students
 Ⓑ and the building
 Ⓒ is full of books
 Ⓓ a place to learn

Directions

For Numbers 10 and 11, choose the words that will complete the sentence.

10. _____sounded interesting.

- Ⓐ About the class
 Ⓑ Told by my teacher
 Ⓒ In school
 Ⓓ That mystery book

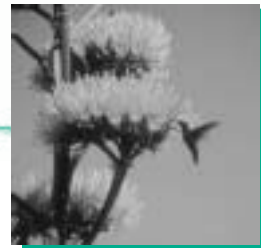
11. My dad's favorite sport _____.

- Ⓐ is baseball
 Ⓑ and football
 Ⓒ lots of practice
 Ⓓ watches on Sunday

Directions

For a class project, a student wrote a report about hummingbirds. Here is part of the report. There are some mistakes that need correcting.

¹ Hummingbirds are small, colorful birds. ² They is fast flyers. ³ They can dive at 45 miles an hour, grab insects for food as they go. ⁴ Sometimes they even fly backward or upside down!



12. Choose the best way to write Sentence 2.

- Ⓐ They are fast flyers.
- Ⓑ They were fast flyers.
- Ⓒ They had been fast flyers.
- Ⓓ Best as it is: They is fast flyers.

13. Choose the best way to write Sentence 3.

- Ⓐ They can dive at 45 miles an hour grab insects for food as they go.
- Ⓑ They can dive at 45 miles an hour? Grab insects for food as they go.
- Ⓒ They can dive at 45 miles an hour, and grab insects for food as they go.
- Ⓓ Best as it is: They can dive at 45 miles an hour, grab insects for food as they go.

14. Choose the sentence that has all the words spelled correctly.

- Ⓐ We hour helping mom make snacks.
- Ⓑ Are mom makes the best cookies.
- Ⓒ The cookies take about one hour to make.
- Ⓓ I hope that you our going to like the cookies.

15. Choose the sentence that has the correct capitalization and punctuation.

- Ⓐ We went to visit the state capitol building in Juneau, Alaska.
- Ⓑ point Barrow is the northernmost point in Alaska.
- Ⓒ The capital of the United States is washington, D.C.
- Ⓓ Mt. McKinley is the highest mountain peak in the United states.

16. Here is a sentence from a story.

The coach cried "Throw!" and Janet let go of the ball.

The exclamation mark in this sentence most likely tells you that

- Ⓐ the coach is speaking loudly
- Ⓑ Janet is throwing the ball
- Ⓒ the coach is waiting
- Ⓓ Janet is excited

17. Choose the sentence that best combines these two sentences into one.

I dreamed about a big cat.

The cat was running in a field.

- Ⓐ I dreamed about a cat was running in a big field.
- Ⓑ I dreamed about a big cat that was running in a field.
- Ⓒ I dreamed about a cat was running in a field and it was big.
- Ⓓ I dreamed about a big cat the cat running in a field that was big.

18. Many people have a favorite season or time of year. Think about your favorite season, and why it is your favorite. On the lines below, write a paragraph. Describe your favorite season and explain why it is your favorite. You do not have to use all the lines.



For this answer, make sure you use complete sentences and check your work for correct spelling, capitalization, and punctuation.

[More lines follow]

SCORING GUIDE—Writing, Grade 3

MULTIPLE-CHOICE QUESTIONS

Sample A	C
Sample C	C
3. C	
4. D	
5. A	
6. C	
7. D	
8. C	
9. C	
10. D	
11. A	
12. A	
13. C	
14. C	
15. A	
16. A	
17. B	

CONSTRUCTED- RESPONSE QUESTIONS

Sample B

Exemplary Response:

In the summer, the days are ~~more~~ longer, so there is time to do things I enjoy. I can ride my ~~bike~~ ^{bike and} ~~And~~ go swimming. I can also play ~~plays~~ in the park with my friends.

Score Points: 4 points possible

- 1 point for changing more longer to longer [grammar]
- 1 point for changing bike to bike [punctuation]
- 1 point for changing And to and [capitalization]
- 1 point for changing plays to play [grammar]

Item 1

Exemplary Response:

Here is a paragraph about bicycling. There are six mistakes in capitalization, punctuation, and spelling. Draw a line through each mistake and write the correction in the space above it.

bicycle. Maybe
Everyone loves riding a ~~bicycle~~, ~~maybe~~ it is the excitement of
places
seeing new ~~Places~~. What could be more fun than the sense of
paths?
adventure as we pedal along our favorite ~~paths~~. With the wind at
backs a lot
our ~~Backs~~, we feel ~~alot~~ like birds flying high up in the sky.

Score Points: 6 points possible

- 1 point for changing bicycle to bicycle [punctuation]
- 1 point for changing maybe to Maybe [capitalization]
- 1 point for changing Places to places [capitalization]
- 1 point for changing paths to paths? [punctuation]
- 1 point for changing Backs to backs [capitalization]
- 1 point for changing alot to a lot [spelling]

Item 2

Pretend that a talking dog moved into your house. On the lines below and on the next pages, write a story describing what happened. Make sure your story has a beginning, a middle, and an end. You do not have to use all the lines.

For this answer, make sure you use complete sentences and check your work for correct spelling, capitalization, and punctuation.

6 POINTS

RUBRIC

Score Points: 6 points possible

Ideas and Content

- ideas are fresh, original, and/or insightful
- ideas are based on the writer's knowledge and/or experience
- details are relevant, telling, and contribute to the whole
- content goes beyond the obvious or predictable
- topic makes a point or tells a story

Organization

- sequencing of ideas and details is logical and effective
- introduction is inviting—draws in the reader
- conclusion is satisfying—leaves reader with a sense of resolution
- transitions are thoughtful; clearly show how ideas connect
- organization flows smoothly, seems effortless

Voice

- language is highly individual
- reader senses the person behind the words; feels an interaction with the writer
- tone gives the writing flavor, adds interest
- language is appropriate for purpose and audience
- narrative writing seems honest, appealing, heartfelt
- expository or persuasive writing reflects a strong commitment to the topic; anticipates reader's questions, shows why the reader should care or want to know more

Word Choice

- words are specific, accurate, striking
- language is natural, not overdone
- verbs are lively
- nouns and modifiers are precise
- clichés and jargon are used sparingly and only for effect

Sentence Fluency

- sentence construction makes meaning clear
- sentences are purposeful and build upon each other
- the writing has cadence; the writer has thought about sound as well as meaning
- sentences vary in length and structure
- fragments are used only for style or effect
- dialogue, if used, sounds natural

Conventions

- paragraphing reinforces the organizational structure
- grammar and usage are correct (few, if any, errors) and contribute to clarity and style
- punctuation is accurate (few, if any, errors) and guides the reader through the text
- spelling is generally correct, even of more difficult words
- the writer may manipulate conventions for stylistic effect

5 POINTS**Ideas and Content**

- ideas are based on the writer's knowledge and/or experience
- details are relevant, telling, and contribute to the whole
- topic makes a point or tells a story
- some ideas are fresh and original

Organization

- sequencing of ideas and details is logical and effective
- introduction is inviting—draws in the reader
- conclusion is satisfying—leaves reader with a sense of resolution
- transitions are thoughtful; clearly show how ideas connect
- organization usually flows smoothly

Voice

- reader senses the person behind the words
- there are occasional moments that surprise, amuse, or move the reader
- tone gives the writing flavor, adds interest
- language is appropriate for purpose and audience
- narrative writing seems honest, appealing, heartfelt
- expository or persuasive writing reflects a strong commitment to the topic

Word Choice

- words are specific and accurate
- lively verbs and picturesque words and phrases are occasionally used
- language is natural, not overdone
- verbs are lively
- nouns and modifiers are precise
- clichés and jargon are used sparingly and only for effect

Sentence Fluency

- sentence construction makes meaning clear
- sentences are purposeful and build upon each other
- sentences vary in length and structure
- fragments are used only for style or effect
- dialogue, if used, sounds natural

Conventions

- paragraphing reinforces the organizational structure
- grammar and usage are correct (few, if any, errors) and contribute to clarity and style
- punctuation is accurate (few, if any, errors)
- spelling is generally correct, even of more difficult words

4 POINTS**Ideas and Content**

- topic and direction are evident, but more information is needed to “fill in the blanks”
- ideas draw on knowledge and/or experience but may not move beyond general observations to specifics
- details are reasonably clear but may not be detailed, personalized, or expanded
- supporting details are present but may not “flesh out” the main point or story line
- original ideas may be blended with ones that are more obvious or predictable

Organization

- sequencing is usually logical but may be predictable or distracting
- introduction is recognizable but may not create a strong sense of anticipation
- conclusion is recognizable but may not tie up all loose ends
- transitions often work well but some connections between ideas may be unclear
- pacing is fairly well controlled but there may be some lapses (e.g., moving ahead too quickly or spending too much time on less important details)
- organization mostly supports the main point or story line, with occasional lapses

Voice

- writing communicates in an earnest, pleasing manner
- voice is inconsistent: it may emerge strongly, then retreat behind general, dispassionate language
- writing hides as much of the writer as it reveals
- writer seems aware of audience and purpose but often weighs words too carefully or discards personal insights in favor of safe generalities

Word Choice

- words are mostly correct and adequate but may lack flair and color
- familiar words and phrases communicate
- attempts at colorful language are made but some may be overdone
- clichés and jargon may be used occasionally in place of fresh language

Sentence Fluency

- sentences are grammatical and hang together
- some variation in sentence length and structure; sentence beginnings are not all alike
- some transitions between sentences are missing or hidden
- parts may be stiff, awkward, choppy, or gangly
- dialogue, if used, sounds stiff at times

Conventions

- paragraphing is attempted but some paragraphs run together or begin in the wrong place
- problems with grammar or usage are not serious enough to impede or distort meaning
- terminal punctuation is usually correct; internal punctuation is sometimes missing or incorrect
- spelling is usually correct or reasonably plausible on common words; misspellings do not impede communication

Ideas and Content

- topic and direction are evident, but writer may digress and go in a different direction or introduce a different topic
- ideas may not draw on knowledge and/or experience; may be general observations
- details are reasonably clear but may not be detailed, personalized, or expanded
- supporting details are present but may not “flesh out” the main point or story line or may be irrelevant to it
- original ideas are rare or absent

3 POINTS

Organization

- sequencing is usually logical but there may be lapses or digressions
- there may be an attempt to write an introduction or conclusion but it may not be clearly recognizable as such; a conclusion, in particular, may be absent
- transitions may be attempted but not work well; connections between ideas may be unclear
- there are frequent lapses in pacing
- there is an attempt at organization but it may depart from supporting the main point or story line

Voice

- writing communicates but without much style or interest
- writing hides the writer; the reader has little or no sense of the writer behind the words
- writer shows some awareness of audience and/or purpose but is inconsistent
- writer speaks in a monotone

Word Choice

- words are mostly correct and adequate with some lapses
- familiar words and phrases communicate with some lapses
- attempts at colorful language are rare or absent
- clichés and jargon may be used as a crutch

Sentence Fluency

- sentences are usually grammatical and hang together with some lapses
- little variation in sentence length and structure; most sentence beginnings are alike
- many transitions between sentences are missing or hidden
- fragments may be present
- dialogue, if used, sounds stiff and unnatural

Conventions

- paragraphing is attempted but many paragraphs run together or begin in the wrong place
- problems with grammar or usage may be serious enough to impede or distort meaning in some instances but not overall
- terminal punctuation is usually correct; internal punctuation is sometimes missing or incorrect, and errors may impede or distort meaning in some instances
- spelling errors may impede or distort meaning in some instances but not overall

2 POINTS**Ideas and Content**

- topic and direction are not evident; the writer has not defined the topic in a meaningful, personal way
- information is very limited or unclear
- text may be repetitious or read like a collection of disconnected, random thoughts
- the writer does not distinguish the main ideas or critical points from the supporting details or less critical points

Organization

- sequencing needs work
- there is no real lead or introduction to set up what follows
- conclusion is missing or does not wrap things up
- transitions seldom work well, with many connections between ideas unclear
- pacing feels awkward; the writer slows to a crawl when the reader wants to move on, and vice versa
- problems with organization make it hard for the reader to get a grip on the main point or story line

Voice

- it is hard to sense the writer behind the words
- the writer does not seem to reach out to an audience or to anticipate the reader's interests or questions
- writing may communicate on a functional level but does not move or involve the reader
- writer does not seem sufficiently at home with the topic to take risks, share personal insights, or make the topic/story personal and real for the reader

Word Choice

- language is so vague and general that only the most general message comes through (*e.g.*, It was a fun time. We did lots of neat stuff.)
- persistent redundancy distracts the reader
- words are often used incorrectly, making the message hard to decipher
- clichés and jargon frequently serve as a crutch
- problems with language leave the reader wondering what the writer is trying to say

Sentence Fluency

- sentences are choppy, incomplete, rambling, or awkward; there may be many fragments
- phrasing does not sound natural; the reader must sometimes reread to get the meaning
- many sentences begin the same way and follow the same pattern (*e.g.*, subject-verb-object) in a monotonous pattern
- transitions between sentences are missing or hidden, or endless connectives create a massive jumble of language in which clear beginnings and endings are lost

Conventions

- paragraphing is missing, irregular, or so frequent (*e.g.*, every sentence) that it has no relationship to the organizational structure of the text
- errors in grammar or usage are very noticeable and may affect meaning
- punctuation is often missing or incorrect
- spelling errors are frequent, even of common words
- the reader must read once to decode, then again for meaning

Ideas and Content

- topic and direction are missing
- information is very limited or unclear
- text may be repetitious, or may read like a collection of disconnected, random thoughts

1 POINT

Organization

- sequencing is absent
- there is no introduction or conclusion
- transitions are absent
- organization is absent; writing may be a brief list

Voice

- the writer seems unaware of an audience or reader; writing seems “painful” to the writer
- writing may not communicate on a functional level
- writer seems uncomfortable with the topic

Word Choice

- language is so vague, inaccurate, and/or general that even the most general message does not come through
- words are frequently used incorrectly, making the message hard to decipher
- problems with language leave the reader unable to understand what the writer is trying to say most of the time

Sentence Fluency

- sentences are choppy, incomplete, rambling, or awkward; there may be many fragments
- the reader must frequently pause or reread
- sentences begin the same way and follow the same pattern (*e.g.*, subject-verb-object) in a monotonous pattern

Conventions

- paragraphing is missing, irregular, or so frequent that it has no relationship to the organizational structure of the text
- errors in grammar or usage are frequent and impede meaning
- punctuation is often missing or incorrect
- spelling errors are frequent and impede meaning
- the reader may be unable to decode the writing

Item 18

Many people have a favorite season or time of year. Think about your favorite season, and why it is your favorite. On the lines below, write a paragraph. Describe your favorite season and explain why it is your favorite.

For this answer, make sure you use complete sentences and check your work for correct spelling, capitalization, and punctuation. You do not have to use all the lines.

4 POINTS

Score Points: 4 points possible

- the writer defines and stays on topic
- supporting details are relevant, develop the topic, and provide important information
- ideas and/or details are explicitly connected to the topic
- topic is developed in a logical, organized, sequential way
- words are accurate, specific, and appropriate for the purpose and audience
- colorful or figurative language may be attempted
- there is a variety of sentence structures
- sentences are purposeful, with clear transitions

3 POINTS

- sentence structures are correct (few, if any, errors)
- grammar and usage are correct (few, if any, errors)
- punctuation and capitalization are correct (few, if any, errors)
- spelling is generally correct, even on more difficult words (few, if any, errors)
- writer defines and stays on topic but does not fully develop it
- supporting details are relevant but may be limited, overly general, or less important; main idea may not be clearly delineated from the details
- writer attempts to develop the topic in a logical, organized sequential way but may falter
- ideas and/or details are connected with the topic implicitly rather than explicitly
- words are mostly accurate, specific, and appropriate for the purpose and audience
- sentence structures are simple but accurate
- there may be an attempt to vary sentence structure
- transitions between some sentences may be missing or unclear
- grammar and usage are mostly correct and errors do not impede meaning
- punctuation and capitalization are mostly correct and errors do not impede meaning
- spelling errors are limited to more difficult words and do not impede meaning

2 POINTS

- topic may be defined but not developed, or writing may be a collection of ideas from which no central topic emerges, or topic may be defined, but writer digresses from it
- supporting details are minimal or many are irrelevant
- main idea is not clearly delineated from the details
- writer does not attempt to develop the topic in a logical, organized, sequential way; writing may be a list rather than a developed paragraph
- ideas and/or details are not connected with the topic, even implicitly
- some words are not accurate, specific, or appropriate for the purpose and audience
- sentences may be choppy or repetitive; there may be some sentence fragments
- there is no attempt to vary sentence structures
- transitions between sentences are missing or unclear
- errors in grammar and usage may impede meaning in some instances
- errors in punctuation and capitalization may impede meaning in some instances
- spelling errors in common words may be present and may impede meaning in some instances

1 POINT

- topic, idea, or story line is not defined
- supporting details are absent or irrelevant
- there is no evidence of organization; writing may be a brief list
- many words are not accurate, specific, or appropriate for the purpose and audience
- sentences are simple, repetitive; there may be many fragments
- errors in grammar and usage may severely impede meaning
- errors in punctuation and capitalization may severely impede meaning
- spelling errors are numerous and may severely impede meaning

TEST ITEM MAP—Writing, Grade 3

Number of Test Questions by Performance Standard

PERFORMANCE STANDARDS	NUMBER OF TEST QUESTIONS			PERCENT OF EMPHASIS	TOTAL RAW SCORE POINTS
	MULTIPLE-CHOICE	SHORT RESPONSE	EXTENDED RESPONSE		
Writing Totals	30	5	1	100%	55
W1.1 Write complete sentences and stories W1.2 Write for audiences	11	2	1	45%	25
W1.4 Proofread writing for spelling, capitalization, and punctuation	12	2		40%	22
W1.5 Revise writing for detail and clarity	7	1		15%	8

MATHEMATICS ASSESSMENT

THE PRACTICE TESTS

The Benchmark **PRACTICE TESTS** were developed to give students and teachers a practical way to become familiar with the kinds of test items that will appear on the Alaska Benchmark Examinations. The practice tests are in no way a predictor of the test taker's grade on the actual Benchmark tests, nor are the practice test questions the same questions that will be on the actual Benchmark tests. The type size of the actual practice tests has been reduced for purposes of this Teacher's Guide.

The **SCORING GUIDES** for the Benchmark Practice Tests provide both correct answers and the guidelines used to score "constructive-response" questions on the practice tests.

The **TEST ITEM MAPS** show the number of questions of each type that measure particular performance standards on each practice test.

PRACTICE TEST—Mathematics, Grade 3

©2001 by Alaska Department of Education & Early Development and CTB/McGraw Hill

SAMPLE QUESTIONS

Sample A

John has 13 red balloons and 10 blue balloons.
How many balloons does he have in all?

- (A) 13
- (B) 14
- (C) 23
- (D) 24

Sample B



Use your pattern blocks to help you solve this problem.



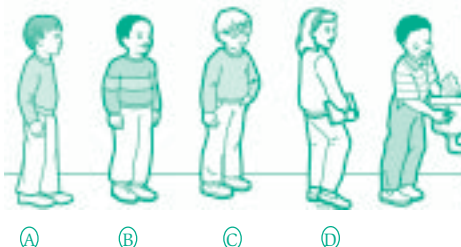
How many green triangles does it take to just cover the red block? _____

Draw on the red block below to show how you got your answer.



PRACTICE QUESTIONS

1. Tim is standing in line at the drinking fountain. He is the second student after the girl in the white sweater. Which of the students shown below is Tim?



2. Sam and his friends are making toy bears. They will glue 2 eyes on each of the bears shown below.



How many eyes will they need for all the bears?

- (A) 6
 - (B) 8
 - (C) 10
 - (D) 12
3. Suzie put the coins shown below in her piggy bank.



Which of these describes the coins?

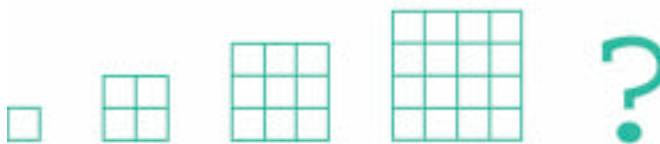
- (A) 3 dimes, 2 nickels, 1 penny
 - (B) 1 quarter, 2 dimes, 3 nickels
 - (C) 2 quarters, 3 nickels, 1 penny
 - (D) 2 quarters, 3 dimes, 1 nickel
4. Look at the pattern that Meg has created on her number chart below.

1	2		4	5
	7	8		10
11		13	14	
16	17		19	20
	22	23		25

What rule did Meg use to create this pattern?

- (A) Shade in all even numbers.
- (B) Shade in all odd numbers.
- (C) Shade in numbers when counting by 3's.
- (D) Shade in numbers when counting by 4's.

5. Ted is using small tiles to make the patterns shown below.



How many small tiles will Ted need to make the next large square in the pattern?

Answer: _____ small tiles

On the lines below, explain in words how you found the number of small tiles Ted will need.

6. Carla drew a shape on paper. She wrote the 2 sentences below about the shape.

It has 3 sides.
It has 3 angles.

Which of these shapes did Carla draw?

- (A) rectangle
- (B) triangle
- (C) square
- (D) circle

7. Which figure below has at least one line of symmetry?



(A)



(B)



(C)



(D)

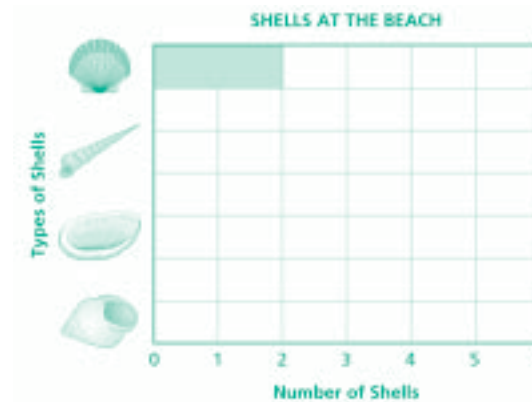
8. Scott will toss one coin 20 times. Which of these sentences below will always be true?

- (A) The coin will land on heads or tails.
- (B) The coin is certain to land on heads all 20 times.
- (C) The coin is certain to land on tails all 20 times.
- (D) The coin will land on heads exactly once.

9. Maria went to the beach and collected 4 different types of seashells.



Complete the bar graph below to show the number of seashells Maria collected. The first one has been done for you.



When Maria got home she found that **all** of her shells like the one shown below had broken.



Using the graph, write how many **unbroken** shells Maria had left.

Answer: _____ unbroken shells

10. Look at the number pattern in the box below.

89, 85, 81, 77, _____

Which number comes next in the pattern?

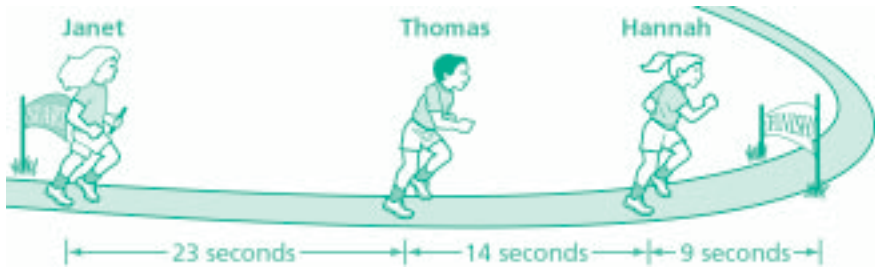
- (A) 72
- (B) 73
- (C) 74
- (D) 75

11. Basketball practice starts in the afternoon, after school.
Which of these could be the time basketball practice starts?

- (A) 12:00 A.M.
- (B) 7:30 A.M.
- (C) 10:00 A.M.
- (D) 3:30 P.M.



12. Janet, Thomas, and Hannah each ran one part of a relay race. The time it took them to run each part of the race is shown below.



How many seconds did it take Janet, Thomas, and Hannah to run the race from start to finish?

- (A) 36
 - (B) 37
 - (C) 46
 - (D) 47
13. Sandy's mother uses strips of tape to hang Sandy's pictures so they will stick to the wall. It takes 4 strips of tape to hang one picture. How many strips of tape will Sandy's mother need to hang 6 pictures?

- (A) 10
- (B) 18
- (C) 24
- (D) 30



14. Eric's class is playing a game. Each student has a bag of treats filled with popcorn, pretzels, and raisins. The table below shows how many points each treat is worth.

1 popcorn		= 1 point
1 pretzel		= 10 points
1 raisin		= 20 points

This is Eric's bag of treats.



How many points does Eric have?

- (A) 44
- (B) 54
- (C) 64
- (D) 74

15. Cindy wants to buy some balloons for a party. Each balloon costs 5 cents. The money Cindy has to spend is shown below.



How many balloons can Cindy buy?

Answer: _____ balloons

On the lines below, explain in words how you found your answer.

16. Mr. Field, the school principal, lost four pages from his calendar. Which of these shows the missing pages in monthly order?

(a) Four calendar pages are shown in a row. From left to right, they are labeled June, August, October, and December. Each page has a grid for the days of the month.

(b) Four calendar pages are shown in a row. From left to right, they are labeled December, June, October, and August. Each page has a grid for the days of the month.

(c) Four calendar pages are shown in a row. From left to right, they are labeled October, December, August, and June. Each page has a grid for the days of the month.

(d) Four calendar pages are shown in a row. From left to right, they are labeled August, December, June, and October. Each page has a grid for the days of the month.

17. Kelly is building towers using white and gray blocks.



white block



gray block

Which of these shows a tower in which $\frac{1}{6}$ of the blocks are white?



(A)



(B)



(C)



(D)

18. Donnie lit a candle. It looked like this.



After he blew out the candle, it looked like this.



What fraction of the candle was used?

(A) $\frac{1}{5}$

(B) $\frac{2}{5}$

(C) $\frac{3}{5}$

(D) $\frac{4}{5}$

SCORING GUIDE—Mathematics, Grade 3

MULTIPLE-CHOICE QUESTIONS

Sample A C

1. B
2. D
3. D
4. C
6. B
7. D
8. A
10. B
11. D
12. C
13. C
14. D
16. A
17. A
18. C

CONSTRUCTED-RESPONSE QUESTIONS

Sample B

Complete and Correct Response

- 3 green triangles

AND

•



2 Score Points

- 1 point for correct number of triangles
- 1 point for correct drawing

Item 5

Complete and Correct Response

- 25 small tiles

AND

- I added 5 tiles to the fourth column of the fourth large square. I added 4 tiles to the bottom row of the fourth large square. Then, I counted all the tiles.

OR

- I added 3 tiles to the single tile to make the second large square. To make the third large square, I added 5 more tiles. To make the fourth large square, I added 7 more tiles. To make the fifth large square, I added 9 more tiles because 9 is the next odd number. Then, I counted all the tiles in the fifth large square.

OR

- Other valid explanation

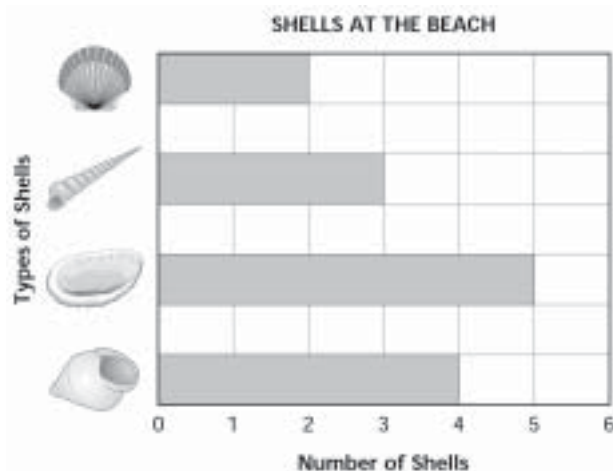
2 Score Points

- 1 point for correct number of small tiles in fifth square
- 1 point for valid explanation

Item 9

Complete and Correct Response

•



AND

- 11 unbroken shells

4 Score Points

- One point each for every correct bar that represents the respective shell.
Note: The top bar was filled out in the test book.
- 1 point for correct number of unbroken shells

Item 15

Complete and Correct Response

- 12 balloons

AND

- I divided 60 by 5 to get 12 balloons.

OR

- The nickel will buy 1 balloon. Each dime will buy 2 balloons. There are 3 dimes, so Cindy can buy 6 balloons with the dimes. The quarter will buy 5 balloons. $1+1+6 = 12$ balloons.

OR

- Other valid explanation

2 Score Points

- 1 point for correct answer of 12 balloons
- 1 point for valid explanation

TEST ITEM MAP—Mathematics, Grade 3

Number of Test Questions by Performance Standard

PERFORMANCE STANDARDS	NUMBER OF TEST QUESTIONS			PERCENT OF EMPHASIS	TOTAL RAW SCORE POINTS
	MULTIPLE-CHOICE	SHORT RESPONSE	EXTENDED RESPONSE		
A1: Numeration	6	1		18%	8
A1.1.1 Read, write, order, count, and model one-to-one correspondence with whole numbers beyond 100.	2				
A1.1.2 Use, model, and identify place value positions of 1's, 10's, and 100's.	2				
A1.1.3 Model and explain the processes of addition and subtraction, describing the relationship between the operations.					
A1.1.4 Select and use various representations of ordinal and cardinal numbers.					
A1.1.5 Identify, model, and label simple fractions, describing and defining them as equal parts of a whole, a region or a set.	1	1			
A1.1.6 Identify, describe and extend patterns inherent in the number system. Skip count by 2's, 5's, and 10's. Add and subtract by 10's. Identify even and odd numbers.	1				
A1.1.7 Demonstrate the commutative and identity properties of addition.					

PERFORMANCE STANDARDS	NUMBER OF TEST QUESTIONS			PERCENT OF EMPHASIS	TOTAL RAW SCORE POINTS
	MULTIPLE-CHOICE	SHORT RESPONSE	EXTENDED RESPONSE		
A2: Measurement	5	1		16%	7
A2.1.1 Compare and order objects by various measurable attributes (including calendar, temperature, length, weight, capacity, area, and volume).	1				
A2.1.2 Compare objects to standard and non-standard units to identify objects that are greater than, less than, and equal to a given unit.	1				
A2.1.4 Choose a unit of measure, and estimate the length and weight of objects and then measure to check for reasonableness.	2				
A2.1.5 Tell time to the nearest half hour, distinguish between morning, afternoon, and evening.	1				
A2.1.6 Identify coins, their value, and the value of given sets of coins.		1			

PERFORMANCE STANDARDS	NUMBER OF TEST QUESTIONS			PERCENT OF EMPHASIS	TOTAL RAW SCORE POINTS
	MULTIPLE-CHOICE	SHORT RESPONSE	EXTENDED RESPONSE		
A3: Estimation and Computation	7	1		20%	9
A3.1.1 Make reasonable estimates of “how many” and “how much”; estimate the results of simple addition and subtraction problems.	2				
A3.1.2 Recall and use basic addition and subtraction facts orally and with paper and pencil without a calculator.					
A3.1.3 Add and subtract whole numbers to 100, using a variety of models and algorithms.	3				
A3.1.4 Model multiplication as repeated addition and grouping objects; model division as “sharing equally” and grouping objects.	2	1			

PERFORMANCE STANDARDS	NUMBER OF TEST QUESTIONS			PERCENT OF EMPHASIS	TOTAL RAW SCORE POINTS
	MULTIPLE-CHOICE	SHORT RESPONSE	EXTENDED RESPONSE		
A4: Functions and Relationships	4	1		14%	6
A4.1.1 Recognize, describe, create, and extend repeating and increasing patterns with a variety of materials including symbols, objects, and manipulatives.	1	1			
A4.1.2 Generate and solve simple functions by identifying and applying addition and subtraction patterns.	1				
A4.1.3 Use a calculator to find and extend patterns in the number system.	1				
A4.1.5 Complete open space sentences with missing numbers; use appropriate vocabulary including greater than, less than, and equal to; and use the correct symbols.	1				

PERFORMANCE STANDARDS	NUMBER OF TEST QUESTIONS			PERCENT OF EMPHASIS	TOTAL RAW SCORE POINTS
MULTIPLE-CHOICE	SHORT RESPONSE	EXTENDED RESPONSE			
A5: Geometry	5	1		16%	7
A5.1.1 Identify, sort, describe, model, and compare circles, and rectangles including squares, regardless of orientation.	1	1			
A5.1.2 Identify, sort, describe, model, and compare plane and solid figures including cubes, cylinders, spheres.	1				
A5.1.3 Identify and create examples of line symmetry; compare and describe given circles, triangles, and rectangles as larger, smaller, or congruent.	2				
A5.1.4 Demonstrate conservation of area using drawings or manipulatives.					
A5.1.5 Recognize geometric shapes in the environment.	1				
A5.1.6 Use comparative directional and positional words: above, below, inside, outside, on, in, right and left, horizontal, vertical, and middle.					
A5.1.7 Draw and build familiar shapes.					

PERFORMANCE STANDARDS	NUMBER OF TEST QUESTIONS			PERCENT OF EMPHASIS	TOTAL RAW SCORE POINTS
MULTIPLE-CHOICE	SHORT RESPONSE	EXTENDED RESPONSE			
A6: Statistics and Probability	3		1	16%	7
A6.1.1 Collect, record, organize, display, and explain the classification of data.	1		1		
A6.1.2 Describe data from a variety of visual displays including tallies, tables, pictographs, bar graphs, and Venn diagrams.	1				
A6.1.3 Use the terms “maximum” and “minimum” when working with a data set.					
A6.1.5 Find and record the possibilities of simple probability experiments; explain differences between chance and certainty, giving examples.	1				
A6.1.6 Conduct a survey and tally the results.					



APPENDIX 3

Proficiency Descriptors

PROFICIENCY DESCRIPTORS

WHAT PROFICIENCY DESCRIPTORS CAN TELL TEACHERS, STUDENTS, AND PARENTS

Students can demonstrate four levels of proficiency on each subject area test of the Grade 3 Alaska Benchmark Examination. Students' scores are interpreted to indicate that their performance is **advanced**, **proficient**, **below proficient** or **not proficient** in each subject area—reading, writing, and mathematics. To give more specific information about what these ratings mean, the committees that established the “cut scores” to distinguish among the ratings developed a series of **PROFICIENCY DESCRIPTORS**. The descriptors can help parents, teachers, and students to understand how far students have progressed in mastering the content and skills that are assessed on the Benchmark Examinations.

A score at a given performance level indicates that a student's work on a particular test demonstrates the majority of skills and content characterized by that level and even more of what is described for the levels below. Some students may achieve some of the competencies described in the next level as well, but not well enough to have scored at that next level.

The short forms of the proficiency descriptors are printed out for students and parents on the score cards they receive after the examination. These give general information about what the student knows and can do. Longer versions of the descriptors describe proficiencies in greater detail, giving teachers and administrators specific information for establishing instructional priorities and helping students meet the performance standards for their age group.

Both short and long forms of the proficiency descriptors are included in this appendix. In some cases, because of the nature of certain competencies, the long forms describe proficiency at only one or two of the three proficiency levels.

PROFICIENCY DESCRIPTORS READING, GRADE 3—Short Form

BELOW PROFICIENT

The student uses knowledge of phonics to recognize sounds of letters and letter combinations including some consonant and vowel blends; uses picture clues and prior knowledge to understand meaning of basic phrases; identifies information stated in text; identifies main ideas in a simple story; identifies basic sequence of steps in directions; describes some story elements; makes connections to understand ideas; and makes predictions about future events.

PROFICIENT

The student uses prior knowledge and context clues to determine meaning; identifies actions of a character; restates key ideas of a text; identifies main ideas or central concept in various texts and basic sequence in directions; describes story elements; makes inferences about characters; and uses details in text to make predictions about different situations.

ADVANCED

The student uses context clues to determine meaning of unfamiliar phrases; identifies statement in text that supports a conclusion; draws conclusion from stated text; states main idea of advanced informational text; writes about details of sequential steps in directions; identifies type and likely source of text; and synthesizes information in order to continue a story.

PROFICIENCY DESCRIPTORS

READING, GRADE 3—Long Form

Uses reading strategies to read text

The below proficient student

- Uses knowledge of phonics to recognize the sounds of letters and letter combinations, including beginning consonant and vowel blends in words.
- Uses picture clues and prior knowledge to understand the meaning of basic phrases.

The proficient student

- Uses prior knowledge and context clues to determine the meaning of words and phrases.

The advanced student

- Determines the meaning of unfamiliar phrases in a text with regional vocabulary using context clues.

Comprehends literal meaning

The below proficient student

- Identifies information stated directly in the text.

The proficient student

- Identifies the behaviors and actions of a character.

The advanced student

- Identifies a statement in the text that supports a conclusion.

Restates information

The proficient student

- Restates key ideas that appear in the text.

The advanced student

- Draws a conclusion from facts stated in the text.

Identifies main idea

The below proficient student

- Identifies the main idea in a simple story.

The proficient student

- Identifies the main idea, lesson learned, or central concept in various types of texts.

The advanced student

- States the main idea of an advanced informational text.

Follows simple directions

The proficient student

- Identifies the basic sequence of steps in a list of directions.

The advanced student

- Writes about the details involved in the steps in a list of directions and their sequence.

Identifies forms of texts

The advanced student

- Identifies type of text (*e.g.*, poetry, fiction, nonfiction, drama).
- Identifies a likely source of a text.

Identifies basic story elements**The below proficient student**

- Describes one or two story elements (setting, character, plot) in a simple story.

The proficient student

- Describes most of the story elements (setting, character, plot) in a variety of stories.
- Makes inferences about character traits and feelings.

Makes connections**The below proficient student**

- Makes simple connections and applies prior knowledge to understand basic ideas.
- Makes predictions about a future event in a simple text.

The proficient student

- Uses details provided in the text to make predictions about different situations.

The advanced student

- Synthesizes information provided in the text to continue the story.

PROFICIENCY DESCRIPTORS

WRITING, GRADE 3—Short Form

BELOW PROFICIENT

The student responds minimally to a prompt using simple sentences; partially edits writing; identifies subjects and verbs; and identifies some simple mistakes in high-frequency spelling words, capitalization at the beginning of sentences, and ending punctuation in statements.

PROFICIENT

The student writes a response that addresses the topic of a prompt; writes a story with a beginning, middle, end, and supporting details; uses some writing conventions correctly; identifies correct subject/verb agreement; recognizes verb tenses; identifies and corrects basic mistakes in high-frequency spelling words, capitalization, and ending punctuation; and combines related sentences for clarity without changing meaning.

ADVANCED

The student writes a story for a specific audience using good organization, correct conventions, vivid word choice, and sentence fluency; identifies and corrects most errors in spelling, capitalization, and punctuation, including contractions, possessives, dates, and place names; identifies use and purpose of punctuation marks; combines and punctuates two sentences without changing meaning; and revises own writing by adding details, using correct punctuation, and ensuring clarity of meaning.

PROFICIENCY DESCRIPTORS

WRITING, GRADE 3—Long Form

Writes a short story**The below proficient student**

- Writes simple sentences to respond to a writing prompt.
- Partially edits writing.
- Identifies subjects and verbs in sentences.
- Identifies complete sentences.

Proofreads writing

The proficient student

- Writes a story that addresses the topic of a prompt and includes a beginning, middle, and end.
- Writes a paragraph with supporting details.
- Uses some writing conventions correctly.
- Identifies correct subject/verb agreement.
- Recognizes verb tenses.

The advanced student

- Writes a story for a specific audience while consistently using
 - voice,
 - organization,
 - correct conventions,
 - specific and vivid word choice, and
 - sentence fluency.
- Uses correct punctuation in own writing.

The below proficient student

- Identifies some simple mistakes in high-frequency spelling words, capitalization at the beginning of a sentence, and ending punctuation for statements.

The proficient student

- Identifies and corrects basic mistakes in
 - high-frequency spelling words, including high-frequency homophones.
 - capitalization, including book titles.
 - ending punctuation for questions.

The advanced student

- Identifies and corrects most errors in
 - spelling, including homophones.
 - capitalization, including proper names.
 - punctuation, including a variety of ending punctuation, contractions, possessives, dates, place names, clauses, and compound sentences.

Revises writing for clarity

The proficient student

- Combines related sentences for purposes of clarity without changing their meaning.

The advanced student

- Identifies the use and purpose of exclamation points and quotation marks in dialogue.
- Combines and punctuates two sentences, with or without conjunctions, while retaining their original meaning.
- Revises and writes for detail and clarity.

PROFICIENCY DESCRIPTORS MATHEMATICS, GRADE 3—Short Form

BELOW PROFICIENT

The student can order whole numbers, use number words that show order, identify even and odd numbers, and use place-value models; identify and combine coins to represent values under \$1.00; measure objects to specified units; round to the nearest 10; use repeated addition to represent multiplication; continue geometric patterns; identify missing numbers in open sentences; identify geometric figures and lines of symmetry; transfer information from charts to graphs, interpret data and draw conclusions, and use everyday language to explain data.

PROFICIENT

The student can read and recognize whole numbers to ten-thousands; accurately draw line segments; translate a given model into a numerical representation of multiplication, compute with regrouping, and use estimation to solve problems; continue numeric patterns with addition or subtraction; use diagrams or other methods to sort and describe objects; identify the results of simple transformations; identify accurate displays of information; and use strategies to solve problems.

ADVANCED

The student can identify fractions as part of a set; identify appropriate units of measure, find values of sets of coins over \$1.00, find elapsed time using clocks, and solve problems involving calendars; use various strategies, including models, to solve multi-step problems; identify rules for given patterns, and complete number sentences involving inequalities; show conservation of area with models; determine the most likely outcome and draw conclusions about probability; and use everyday language to explain and defend solutions to problems.

PROFICIENCY DESCRIPTORS MATHEMATICS, GRADE 3—Long Form

Numeration

The below proficient student

- Uses number words that show order (first, second, third, etc.).
- Identifies and writes missing numbers in a counting sequence to 1,000.
- Represents and identifies place values from 1's to 1,000's.
- Identifies even and odd numbers.

The proficient student

- Compares and orders numbers.
- Writes numbers to the ten-thousands place using words.

The advanced student

- Identifies fractions as part of a set.
- Uses everyday language to explain own thinking about solutions to problems.

Measurement

The below proficient student

- Combines sets of coins to determine values under \$1.00.
- Uses a ruler to accurately measure objects to specified whole units.

The proficient student

- Uses a ruler to accurately measure objects to the nearest half-inch.
- Uses a ruler to draw a line segment to a specified length.

Estimation and Computation

The advanced student

- Determines the value of a given set of coins over \$1.00 and writes it in correct notation.
- Applies problem-solving strategies to determine a specific date on a calendar.
- Chooses the appropriate unit to measure a given item.
- Uses an analog clock to read time to the quarter hours and finds elapsed time.
- Compares and orders objects.

The below proficient student

- Chooses a strategy to estimate.
- Accurately rounds to the nearest 10.
- Solves a problem using repeated addition or multiplication.

The proficient student

- Subtracts whole numbers with regrouping.
- Translates a model of multiplication into an appropriate numeric representation.
- Estimates the value of the whole given the value of a part.
- Translates problems from everyday language into mathematical language and symbols.
- Develops and applies strategies to solve a variety of problems.

The advanced student

- Uses mathematical models to solve a problem.
- Discriminates between useful and non-useful information in problems.
- Adds and subtracts whole numbers to three-digits with regrouping.
- Solves multi-step problems.
- Represents division as sharing equally.

Functions and Relationships

The below proficient student

- Recognizes, describes, and creates an extension of geometric patterns.
- Completes sentences with missing numbers.

The proficient student

- Generates and solves simple functions involving addition and subtraction.
- Predicts an answer before solving a problem and checks answers for reasonableness.
- Uses everyday language to explain reasoning about a problem.

The advanced student

- Develops and applies a rule to solve a problem.
- Applies strategies to a given story problem to extend a pattern.

Geometry

The below proficient student

- Identifies shapes.
- Identifies and draws lines of symmetry.
- Identifies geometric shapes in a given position.

Statistics and Probability

The proficient student

- Identifies, sorts, and describes common characteristics of a given set of objects.
- Uses mathematical language to explain conclusions.
- Identifies simple transformations (slides, flips, and turns).
- Sorts a set of geometric shapes according to given characteristics.

The advanced student

- Combines shapes to make a new shape.
- Demonstrates knowledge of area.
- Demonstrates problem-solving skills using geometric shapes.

The below proficient student

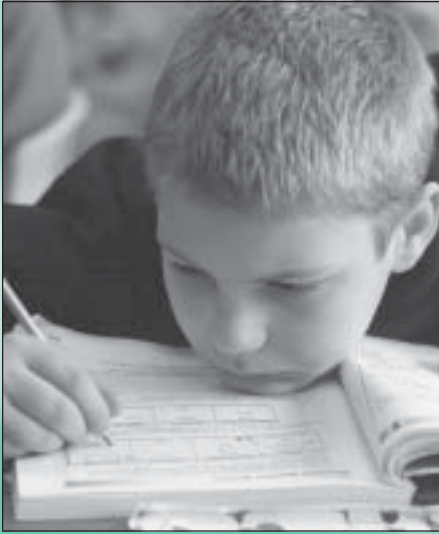
- Reads and transfers information from a table to a pictograph or bar graph.
- Labels and displays data on a pictograph or bar graph.
- Interprets data from a graph or table.
- Uses everyday language to explain graphical data.
- Uses graphs and tables to represent mathematical information.
- Draws conclusions about information presented in tables or graphs.

The proficient student

- Determines which graph accurately displays a given set of data.
- Draws conclusions about mathematical problems.

The advanced student

- Determines the most likely outcome in a test of simple probability.
- Determines the probability of a given event.
- Finds examples that support or refute mathematical statements.



APPENDIX 4

An Overview of Standards and the Comprehensive System of Student Assessment in Alaska

OVERVIEW

AN OVERVIEW OF ALASKA'S STANDARDS AND THE ALASKA BENCHMARK EXAMINATIONS

Beginning in 1993 and 1994 the Alaska State Board of Education & Early Development adopted content standards for students in 10 areas—English/language arts, mathematics, science, geography, government and citizenship, history, skills for a healthy life, arts, world languages, and technology. Later, the Board adopted employability standards and endorsed the cultural standards for students developed by the Alaska Native Knowledge Network in 1998. All of these standards are broad statements of what students should know and be able to do as a result of their twelve years of public schooling.

In addition to the broad statements of what students should know and be able to do that are laid out in the **content standards**, more specific statements of what students should know and be able to do were expressed in student **performance standards** for three subject areas—reading, writing, and mathematics. The reading and writing performance standards are more specific statements of the content standards in English/language arts. The mathematics performance standards are more specific statements of the content standards in mathematics.

Performance standards were written for four age groups of students and are commonly referred to as **benchmarks**. The first benchmark is for students ages 5-7; the second for students ages 8-10; the third for students ages 11-14; and the fourth for students ages 15-18. The fourth benchmark is also referred to as the high school benchmark.

The Alaska Comprehensive System of Student Assessments calls for **Benchmark Assessments** to be administered to all students across the state in grades 3, 6, and 8 in reading, writing, and mathematics. In addition, the High School Graduation Qualifying Exam can be administered to high school students beginning in their second semester of the 10th grade. The correspondence between benchmark age groups and the grade levels offered in traditional schools is as follows:

Benchmark	Age Group	Grades when students are instructed on standards	Grade level of benchmark exam
1	5-7 yrs	Grades K-2	Grade 3
2	8-10 yrs	Grades 3-5	Grade 6
3	11-14 yrs	Grades 6-8	Grade 8
High School	15-18 yrs	Grades 9-12	Grades 10-12

The information in this table provides a guideline for schools and not a requirement. Students progress at different rates over their public school careers, and local school districts have clear authority to establish their own curricula and instructional programs within the constraints of state statutes and regulations. An instructional and curricular sequence based on these guidelines, however, would clearly offer students an excellent opportunity to learn the standards and do well on the benchmark examinations and the High School Graduation Qualifying Exam.

The four Benchmark Assessments are part of the **Alaska Comprehensive System of Student Assessments**, a program designed to provide ongoing information about performance on the reading, writing, and mathematics performance standards throughout a student's K-12 educational experience. The system provides for continual monitoring of student progress and will help alert schools when students need additional assistance in mastering the standards well before they take the High School Graduation Qualifying Exam.

The components of the Comprehensive System of Student Assessments are displayed in the following table:

Components of the Comprehensive System of Student Assessments	Grade at which Administered
Developmental Profile	Kindergarten & entering grade 1
Benchmark 1 Assessment	Grade 3
Norm-referenced Test	Grade 4
Norm-referenced Test	Grade 5
Benchmark 2 Assessment	Grade 6
Norm-referenced Test	Grade 7
Benchmark 3 Assessment	Grade 8
Norm-referenced Test	Grade 9
High School Graduation Qualifying Examination	First offered in spring of grade 10. Students can continue taking until they pass all three parts. Offered again twice a year in grades 11 and 12, and twice a year for up to 3 years after completion of high school.

The **Developmental Profile** is administered to kindergarten students or first grade students entering the public schools for the first time. It asks the teachers of these students to record students' developmental readiness using 11 indicators and to record background characteristics in three areas. *For more information see the Alaska Kindergarten/First Grade Profile section on the Alaska Department of Education & Early Development web site: (www.eed.state.ak.us).*

As discussed above, the **Benchmark Assessments** given to students in grades 3, 6, and 8 measure student performance in relation to statewide standards for reading, writing, and mathematics. These standards are developmentally related to the standards for high school students, and they monitor students' progress over their 12-year public school experience.

Beginning in March 2002, students in grades 4, 5, 7, and 9 will be given a **Norm-referenced Test**, Terra Nova, *The Second Edition*®. Norm-referenced tests are valuable because they provide information about how well students in Alaska compare with students nationally. The Benchmark Assessments and the High School Graduation Qualifying Exam cannot be used to compare Alaska students with students in other states or the nation because they are unique tests that measure how well students have achieved the Alaska Performance Standards in Reading, Writing, and Mathematics.

On the basis of student data from all these tests, the Department of Education & Early Development will begin in August 2002 to issue **School Designators** for each of the 500 schools in the state. Schools will be designated as distinguished, successful, deficient, or in crisis.

For more information see Frequently Asked Questions, Proficiency Descriptors, and Alaska Content and Performance Standards in Reading, Writing and Mathematics in this teacher's guide; or visit the Department of Education & Early Development web site: (www.eed.state.ak.us)

ACKNOWLEDGMENTS

STATE OF ALASKA

Tony Knowles, *Governor*

Fran Ulmer, *Lieutenant Governor*

ALASKA DEPARTMENT OF EDUCATION & EARLY DEVELOPMENT

Shirley J. Holloway, Ph.D., *Commissioner*

Mark Leal, *Administrator, Assessments and Student Information*

Richard Smiley, Ph.D., *Administrator, Alternative Assessments*

Nicholas Stayrook, Ph.D., *Director, Program Planning and Evaluation*
Fairbanks North Star Borough School District

Ardy Smith Miller, Ph.D., *Administrator, Reading/Language Arts*

Bev Smith, *Math Specialist*

Nanci Spear, *Math Specialist*

Thanks also to Sharon Early, Bobbie Lowden, and members of the Resource Document Work Groups for their work on Suggested Activities.

ALASKA STATE BOARD OF EDUCATION & EARLY DEVELOPMENT

Susan Stitham, *Chair, Fairbanks*

Ernie Hall, *First Vice Chair, Anchorage*

Mike P. Williams, *Second Vice Chair, Akiak*

Diane Heard, *Eagle River*

Roy Nageak, *Barrow*

Paula Pawlowski, *Anchorage*

Sally Rue, *Juneau*

Lt. Col. Mark Avery, *Military Advisor, Elmendorf Air Force*

Meagan Coffland, *Student Advisor, Sitka High School*

ALASKA STATE LEGISLATURE

COMMITTEES IN SUPPORT OF STUDENT ASSESSMENT

The following committees composed of parents, teachers, public school administrators, and university professors contributed their time and expertise to make sure the Alaska Benchmark Examinations meet the high standards and expectations of Alaskans:

CONTENT REVIEW COMMITTEE

Alaska Joint Electrical Apprenticeship Training & Trust—Pete Galle; **Alaska Trucking Association**—Frank Dillon; **Alyeska Central School**—Jeanne Foy; **Anchorage Convention and Visitors Bureau**—Louise Lazur; **Anchorage School District**—Maxine Hill, Anne Morris; **Fairbanks North Star Borough School District**—Linda Benson, Martin Foster, Carol Lee Gho; **Guardsmark, Inc.**—Melvin McMillan; **Juneau Borough School District**—Angie Lunda; **Kenai Peninsula Borough School District**—Toni Parlow; **Ketchikan Gateway Borough School District**—Rose Roppel; **Lower Kuskokwim School District**—Bev Williams; **Matanuska-Susitna Borough School District**—Connie Lutz, Andy Murr, Linda Volkman; **Municipality of Anchorage**—Deanna Barbarick; **MCF Inc. Consulting**—Maynard Falconer; **National Bank of Alaska**—Cathy Richter; **Northwest Arctic Borough School District**—Sandy Kowalski; **Parents**—Viletta Knight, Jim Wachter; **Phillips Alaska, Inc.**—Kenny Bryant; **Process Industries**—Sharon Keller; **Student**—Andrea Staats; **VECO Alaska, Inc.**—Pam Gallivo; **Yupit School District**—Diane George.

TEST BIAS REVIEW COMMITTEES

COMMITTEES TO ESTABLISH BENCHMARK CUT SCORES

READING

Anchorage School District—Mike Henry, Francine Jackson, Catherine Jones; **Fairbanks North Star Borough School District**—B.J. Williams; **Lower Kuskokwim School District**—Karen Schwabach, Phyllis Williams; **Lower Yukon School District**—Mike Hull; **Nome City School District**—Karen Hofstetter, Pearl Sedacca; **Northwest Arctic Borough School District**—Kathy Skin, Stan Van Amberg.

WRITING

Alaska Gateway School District—Becky Gallen; **Bering Strait School District**—Sheri Skelton; **Delta/Greely School District**—Mary Corcoran; **Denali Borough School District**—Karen Harris; **Fairbanks North Star Borough School District**—Shaun Kraska; **Kenai Peninsula Borough School District**—Wayne Clark; **Kodiak Island Borough School District**—Leslie Soughers; **Lower Kuskokwim School District**—Rachel Nicholai; **Lower Yukon School District**—Thomas Genne; **Northwest Arctic Borough School District**—Enoch Adams, Penny Ramos; **Sitka Borough School District**—Gayle Hammons.

MATHEMATICS

Anchorage School District—Linda Smith; **Denali Borough School District**—Patricia Gallego; **Galena City School District**—Patrick Tatera; **Kenai Peninsula Borough School District**—Stephanie Anderson, Sandy Miller; **Lake and Peninsula Borough School District**—Sally Karr; **Lower Yukon School District**—Robin Barnhouse; **Petersburg City School District**—Bev Siercks; **Sitka Borough School District**—Dan Langbauer.

READING

Alyeska Central School—Jaxine Andersen, Marvel Lloyd; **Anchorage School District**—Julia Gibeault, Lynn Mayberry, Melvie Ross, Arlene Sandberg, Eileen Frey, Gene Janigo, Cynthia Smalley, Marsha Taylor, Sidnie Seaward, Aurora Hovland, Jeanne Bradner; **Attorney at Law**—Herbert Berkowitz; **Chatham School District**—Mary Jean Duncan, Sally Kookesh; **Copper River School District**—Sue Moore; **Dillingham City School District**—Marilyn Rosene; **Fairbanks North Star Borough School District**—Jill Addington, Ginny Brookes, Karen Parrish, Walkie Charles; **Iditarod Area School District**—Joyce Conatser; **Juneau Borough School District**—Bonnie Stangl, Carolyn Spalding; **Kake City School District**—Dwayne Davies; **Kenai Peninsula Borough School District**—Anne Pfitzner, Dan Walker, Toni Parlow, Mark Leal; **Ketchikan Gateway Borough School District**—Douglas Gregg; **Kodiak Island Borough School District**—Jack Walsh; **Lower Yukon School District**—Dave Voisine; **Matanuska-Susitna Borough School District**—Donnah-Rae DeVernon, Roselyn Sant, Sarah Loomis, Patrick Mayer, Linda Volkman; **Nenana City School District**—Wayne Sloat; Cynthia Ronnander; **North Slope Borough School District**—Glenda Bradley; **Petersburg City School District**—Susan Bjorkquist Holmes; **Sitka Borough School District**—Nancy Leclerc-Davidson, Judy Kearns-Steffen; **Southeast Island School District**—Amelia Dilworth; **Unalaska City School District**—Bonnie Whitney; **Wrangell Public School District**—Jenn Miller, Robert Davis; **Yukon/Koyukuk School District**—Christina Semaken, Gina Hrinko.

WRITING

Alyeska Central School—Sue Jones, Jeanne Foy; **Anchorage School District**—Karen Reeve, Roger LeBlanc, Rebecca Randazzo, Michael Webb, Glenn Wright, Diane Etter; **AVTEC**—Debra Burdick; **Chatham School District**—Cheryl Stickler; **Copper River School District**—Vernetta Banning; **Cordova City School District**—Sue Shellhorn, Mary Davis, Debra Adams; **Delta/Greely School District**—Michael McCowan; **Denali Borough School District**—Sonja Schmidt; **Dillingham City School District**—Sherry Ingham; **Fairbanks North Star Borough School District**—Amy Kenaston, Patti Shechter, Linda Schandelmeier, Carolyn Jordan; **Juneau Borough School District**—Nancy Hakari, Kathy Nielson, Dick Fagnant, Janet Valentour, Paulette Simpson, Didi Ryall; **Ketchikan Gateway Borough School District**—Michael Lord, Sheri Boehlert; **Kodiak Island Borough School District**—Teresa Hedges, Mike Sirofchuck; **Matanuska-Susitna Borough School District**—Margaret Heaven, Misty Holler, Barry Johnson, Nancy Johnson, Constance Lutz, Helen Cole; **Nome City School District**—Linnea Ann Baker; **Northwest Arctic Borough School District**—Susan Mason; **Sitka Borough School District**—Jennifer Oen, Janelle Favour; **Unalaska City School District**—Juanita Gillispie.

MATHEMATICS

Alyeska Central School—Cecilia Miller; **Anchorage School District**—Jody Hagen, Patty Kennedy, Mary Murphy, Linda Stuart, Sally Loudermilk, Barbara Erb, Gary Bonin; **Cordova City School District**—Tim Walters; **Delta/Greely School District**—Richard Mauer; **Denali Borough School District**—Patricia Gallego; **Dillingham City School District**—Janie Hill; **Fairbanks North Star Borough School District**—Gretchen Murphy, Janet Speed, Richard Smith, Laurie Robertson, Michelle Henderson, Hannibal Grubis; **Galena City School District**—Marylee Kauffman; **Iditarod Area School District**—Mike Baumgartner, Wilma Payne; **Juneau Borough School District**—Cherry Eckland, Rosemarie Gleason, Lynn Williams, Patsy DeWitt, Mary Borthwick; **Kenai Peninsula Borough School District**—Cheryl Schweigert, Steven Wolfe; **Ketchikan Gateway Borough School District**—Celia Eklund, Mary Gregg; **Lower Kuskokwim School District**—Willard Waite, Karen Dodd, Beverly Smith, Kevin McCalla; **Lower Yukon School District**—Susan Akaran, Judy Voisine; **Matanuska-Susitna Borough School District**—Kelly Dau, Robin Howell, Karl Lund, Brenda Luthi, Mike Martinelli; **Nenana City School District**—Keith Berntsen, Nancy Bauer; **Sitka Borough School District**—Cindy Harvey, John Feryok II, Michael Morris, Lyle Sparrowgrove; **Unalaska City School District**—Jerry Whitney; **Valdez City School District**—Cathy Crepin.

TECHNICAL REVIEW COMMITTEE

Anchorage School District—Ray Fenton, Steve Garrison, Thomas Straugh; **Fairbanks North Star Borough School District**—Nicholas Stayrook; **Kenai Peninsula Borough School District**—Ed McLain, Michael Wykis; **Kodiak Island Borough School District**—Larry LeDoux; **Matanuska-Susitna School District**—Nancy Norman (retired); **University of Alaska, Anchorage**—Dennis Edwards; **Yupit School District**—John Weise.

FOR MORE INFORMATION

Mark Leal, Administrator, Assessments & Student Information
Alaska Department of Education & Early Development
801 West Tenth St., Suite 200
Juneau, AK 99801-1894
(907) 465-8691
mark_leal@eed.state.ak.us